

harmony that existed between faith and reason, or what we may call “religion and science,” in the Islamic intellectual tradition. Invoking God in works that we describe as related to science and reason was a normative practice in classical Islamic texts, whose writers themselves were most often devout Muslims.¹

¹ Note that the Islamic world never experienced a split between the divine and mundane worlds, or between religious/spiritual matters and science, knowledge, philosophy, etc. and therefore, in this sense, cannot be compared to European intellectual traditions.

ṣāwala of a text to clarify a work’s identity. Second, the *ḥamdalas* and *ṣāwalas* of a text often serve as a signature or “fingerprint” of the authors themselves. In this segment of a text, the author often used words and phrases that indicate his stream of thought or his position on a controversial theological matter. There are often poetic wordplays and other clues that indicate the author’s intent in writing the text. In some ways, these parts of premodern texts resemble the preface of a modern text, in the sense that both reveal information about the author’s perspective and rationale in writing a book.

The invocations in the introduction of this text are notably brief, as compared to that of others works (in general). The transmitter of the text gives Athīr al-Dīn al-Abḥārī titles such as, “the polymath (*‘allāma*) and foremost scholar of the post-classical era.” This indicates that al-Abḥārī was respected enough in stature to receive the honorific title *‘allāma*, which is used to refer to those with extensive erudition in a variety of fields of knowledge. The term *muta’akḥḥirīn* indicates that the followers of al-Abḥārī recognized a clear distinction between the classical (*mutaqaḍḍimīn*) Ash’arī theologians who maintained al-Juwaynī’s model of theology and the post-classical (*muta’akḥḥirīn*) Ash’arī theologians who followed the blueprint of al-Rāzī, whose discussions of theology restructured *kalām* texts to address questions raised by ancient philosophy, as discussed in the introduction. The next phrase, “the model for the rooted philosophers,” seems to be a response to those who objected to the study of philosophy on religious grounds. His being “rooted” (*rāsikhīn*) asserts al-Abḥārī’s foundational place in mainstream Islamic theology.

Another noteworthy element of this invocation is al-Abḥārī’s statement that his treatise in logic is intended as a primer for those who wish to study other Islamic (sciences). This statement is designed to remind readers of the importance of logic as a tool to comprehend other fields, such as jurisprudence (*fiqh*) and theology. He also reminds the reader that ultimately, success in the study of logic is achieved through divine facilitation. This is a significant illustration of the

TRANSLATION

The Logic of Athīr al-Dīn al-Abḥārī

- [1] The shaykh, erudite *imām*, best of the post-classical [scholars], model for the rooted philosophers, Athīr al-Dīn al-Abḥārī, may God make his resting place pleasant and make paradise his final abode, said: “We thank God the exalted for granting success, ask Him for guidance on His path, and we send prayers upon Muḥammad and the entirety of his kin.”
- [2] To proceed, this is a treatise on logic. We have conveyed in it what must be understood in order to begin studying any part of the sciences while depending on God, as He is the most generous source of goodness and abundance.

EXPLANATORY NOTES

In beginning to read classical texts, it is not uncommon for many to hasten through what is known as the *basma*, *ḥamdala*, and *ṣāwala*. This standard format appears at the beginning of classical texts; it is composed of an invocation of God (*basma*; lit., “in the name of God”), an expression of gratitude to God (*ḥamdala*; lit., “praise be to God”), and sending blessings on the Prophet Muḥammad (*ṣāwala*; lit., “may the peace and blessings of God be on him”). Notably, no two texts have an identical *ḥamdala* and *ṣāwala*. The *ḥamdalas* and *ṣāwalas* of classical texts served at least two functions. First, in many ways they are analogous to a modern ISBN number, and can be a way of distinguishing texts. Encyclopedic lists of books like that of the renowned Ottoman scholar Katip Çelebi often list the *ḥamdala* and

الْمَنْطِقِيُّ لِأَثِيرِ الدِّينِ الْمُفَضَّلِ بْنِ عَمَرَ الْكُبْهَرِيِّ

[١] قَالَ الشَّيْخُ الْإِمَامُ الْعَلَمَةُ الْأَفْضَلُ الْمُتَأَخَّرِينَ، قُدْوَةُ الْحُكَمَاءِ الرَّاسِخِينَ

أَثِيرُ الدِّينِ الْكُبْهَرِيُّ، مَلَيْبِ اللَّهُ نَزَاهُ، وَجَعَلَ الْجَنَّةَ مَثْوَاهُ؛ نَحْمَدُ اللَّهَ تَعَالَى

عَلَى تَوْفِيقِهِ، وَنَسْأَلُهُ هِدَايَةَ طَرِيقِهِ، وَنُصَلِّي عَلَى مُحَمَّدٍ وَعَرَّتِهِ أَجْمَعِينَ.

[٢] أَمَّا بَعْدُ: فَهَذِهِ رِسَالَةٌ فِي الْمَنْطِقِ، أَوْرَدْنَا فِيهَا مَا يَجِبُ السَّيْخَاضَاتِهَا لِمَنْ

يَبْتَدِئُ فِي تَحْقِيقِهِ مِنَ الْعُلُومِ مُسْتَعِينًا بِاللَّهِ إِنَّهُ مُفِيطُ الْقُدْرِ وَالْجُودِ.

The Logic of Athīr al-Dīn al-Abḥārī

- [1] The shaykh, erudite *imām*, best of the post-classical [scholars], model for the rooted philosophers, Athīr al-Dīn al-Abḥārī, may God make his resting place pleasant and make paradise his final abode, said: “We thank God the exalted for granting success, ask Him for guidance on His path, and we send prayers upon Muḥammad and the entirety of his kin.”
- [2] To proceed, this is a treatise in logic. We have conveyed in it what must be understood in order to begin studying any part of the sciences while depending on God, as He is the most generous source of goodness and abundance.

مَتْنُ الرِّسَالَةِ

THE TEXT OF THE PRIMER



Isagoge

- [3] Utterances that signify [meanings] by designating meaning to each articulated sound (*bi-l-waḍʿi*) can denote these meanings for which they [the utterances] have been posited, [either] in their entirety through a **full correlation** (*bi-l-muṭābaqa*); or [they can do so] in part through **inclusion** (*bi-l-taḍammun*), if [the meaning that an utterance refers to] is part [of this expression]; or [an utterance can designate a meaning through] what is associated (*yulāzimuha*) with it in the mind. For example, [the word] “human” refers to a rational animal through full correlation, [and “human” refers] to one of the two categories [i.e., animal or rational being] through inclusion, and [“human” refers to one who is] inclined toward learning and the art of writing through **association** (*bi-l-iltizām*).
- [4] Expressions are either **singular** (*mufrad*), such as the word “human” (*insān*), which does not convey a partial meaning if it were divided into two parts [such as *in* and *sān*]. Or they [expressions] can be compound (*murakkaf*), such as [the expression] “rock thrower.”
- [5] A singular expression can be either **universal** (*kullī*), which is [an expression] that does not impede the conception of its meaning being shared among many, like the term “human.” Or it can be a **particular** (*juḡʿī*) [expression], which means it is an expression that prevents the conception of its meaning [being shared by many], like [for instance], “Zayd.”

إِنشَاءُ عَوَجِي

الْقَلْبُ الدَّلَالُ بِالْوَضْعِ، يَدُلُّ عَلَى تَمَامٍ مَا وَضَعَ لَهُ بِالْمُطَابَقَةِ، وَعَلَى جُزْئِهِ

بِالتَّشْطِيفِ إِنْ كَانَ لَهُ جُزْءٌ، وَعَلَى مَا يُلَازِمُهُ فِي الدِّهْنِ بِالْإِلْتِزَامِ، كَالْإِنْسَانِ

فَإِنَّهُ يَدُلُّ عَلَى الْحَيَوَانِ النَّاطِقِ بِالْمُطَابَقَةِ، وَعَلَى أَحَدِهِمَا بِالتَّشْطِيفِ، وَعَلَى قَابِلِ الْعِلْمِ وَصَنَعَةِ الْكِتَابَةِ بِالْإِلْتِزَامِ.

فَمِ الْمَقْلُطُ: إِمَّا مُفْرَدٌ: وَهُوَ الَّذِي لَا يُرَادُّ بِالْجُزْءِ مِنْهُ دَلَالَةٌ عَلَى جُزْءٍ مَعْنَاهُ،

كَالْإِنْسَانِ، وَإِمَّا مُرَكَّبٌ: وَإِذَا مَوْلُفٌ: وَهُوَ الَّذِي لَا يَكُونُ كَمَذَكِ، كَرَايِ الْحِجَارَةِ.

وَالْمُفْرَدُ: إِمَّا كَلِمَةٌ: وَهُوَ الَّذِي لَا يَمْنَعُ نَفْسَ تَصَوُّرِ مَعْنَاهُ عَنْ وَقُوعِ

الشَّرِكَةِ بَيْنَ كَثِيرِينَ، كَالْإِنْسَانِ، وَإِمَّا جُزْئِيٌّ: وَهُوَ الَّذِي يَمْنَعُ نَفْسَ تَصَوُّرِ

مَعْنَاهُ عَنْ ذَلِكَ، كَمَزِيدٍ.

TRANSLATION

Isagoge

- [3] Utterances that signify [meanings] by designating meaning to each articulated sound (*bi-l-waḍʿi*) can denote these meanings for which they [the utterances] have been posited, [either] in their entirety through a **full correlation** (*bi-l-muṭābaqa*); or [they can do so] in part through **inclusion** (*bi-l-taḍammun*), if [the meaning that an utterance refers to] is part [of this expression]; or [an utterance can designate a meaning through] what is associated (*yulāzimuha*) with it in the mind. For example, [the word] “human” refers to a rational animal through full correlation, [and “human” refers] to one of the two categories [i.e., animal or rational being] through inclusion, and [“human” refers to one who is] inclined toward learning and the art of writing through **association** (*bi-l-iltizām*).

EXPLANATORY NOTES

Al-Abhari begins his introduction to logic by analyzing what constitutes an utterance (*lafz*) that has meaning and by examining how these meanings are conveyed. First, an utterance can convey meaning by being an exact equivalent of what that utterance refers to. Al-Abhari refers to this form of conveying meaning as full correlation (*muṭābaqa*). In the example provided in this text, a rational animal is said to be an exact definition of a human. This definition excludes anything that is not a human and includes all humans. Such an utterance is the most precise form of referring to something.

Second, a word can convey meaning through another word that includes what is being referred to, but is not precise enough to exclude other things that are not being referred to in its categories. Thus, in al-Abhari's example, if rather than saying humans are “rational animals,” we say that they are “rational beings,” or that they are “animals,” it would still refer to humans. However, these broader categories do not restrict the meaning by linking the words “rational” and “animal” in one phrase because they may include other things that are not human. This makes the utterance a less precise way of referring to its object, which in this case is humans.

Finally, an utterance can refer to an object indirectly by causing the mind to form an association with the actual object the utterance indicates. This necessary association is what is known as *iltizām*.² Al-Abhari gives an example of this way of conveying meaning by referring to a human as “one who is inclined toward learning and the art of writing.” Only one being normally comes to mind from this description, namely, a human.

Another example of the three ways in which utterances can create meanings that refer to something follows here. For example, if we say “Zaynab” we are referring to a specific individual. Here the word “Zaynab” is exact in its reference to a specific person. This is al-Abhari's exact correlation. Alternatively, we could refer to Zaynab by saying, “a woman.” While this is an accurate statement, its lack of specificity means that it can include other women who are not Zaynab; al-Abhari refers to this as definition by partial inclusion. Finally, Zaynab could be

² When Aristotle's tripartite theory of meaning as consisting of sounds, thoughts, and things took hold among logicians in the Arabic speaking world, it was met with resistance from Arabic grammarians who maintained Arabic conceptions of linguistic forms based on oral tradition. For more on the tripartite versus bi-partite debates in early Islamic history, see Peter Adamson and Alexander Key, “Philosophy of Language in the Medieval Arabic Tradition,” in *Linguistic Meaning: New Essays in the History of the Philosophy of Language*, ed. Margaret Cameron and Robert J. Stainton (Oxford: Oxford University Press, 2015), 74–99.

referred to by association; for example, we could say, “the professor of theology” or “the woman seated in the front of the classroom.” These ways of describing Zaynab directly refer to her by mental associations that cause the listener to infer that we are referring to Zaynab who is a professor of theology and the woman sitting at the front of the classroom.

Concepts (*taṣawwūrāt*) and Assents (*taṣdīqāt*) in the Islamic Logic Tradition

The division of logic into sections related to concepts and those related to assents is a unique feature that evolved in the Islamic intellectual tradition of philosophy and post-classical theology (*kalām*). Though this dichotomy first appeared in al-Fārābī's writings (specifically, at the beginning of *al-Burhān*), it was Ibn Sīnā who substantively restructured the contents of Aristotle's *Organon* into aspects of logic that are based on concepts (*taṣawwūrāt*) and assents (*taṣdīqāt*).³ This is portrayed in the sections on logic in his *Hikmat al-mashriḡiyya* and the *ishārāt wa-tanbīhāt*.

Al-Abhari's *Isagoge* follows this dichotomy by dividing its discussion on logic into two main sections: concepts and assents; each of these sections has two subsections (mentioned below). The foundations of concepts (*mabādī' al-taṣawwūrāt*) includes sections on utterances (*lafz*), the five predicables, and definitions. This is followed by a section on the objective of these concepts (*maqāṣid al-taṣawwūrāt*), namely, the expository statement (*qawliyya shāriḥ*). All of these are various

³ The term “assent” means to agree, especially after deliberation. In logic, judgments are acts of the mind, in which a subject and predicate are equated to produce propositions. Inferences are the process of combining premises in the form of propositions to arrive at a conclusion. The term *taṣdīq* is used in Arabic logic such that it includes judgments (made by identifying *qadāya*) and inferences (made by identifying *qiyās*). Since no single term in English logic fully correlates to this use of *taṣdīqāt* in Arabic logic, we translate it as “assents.”

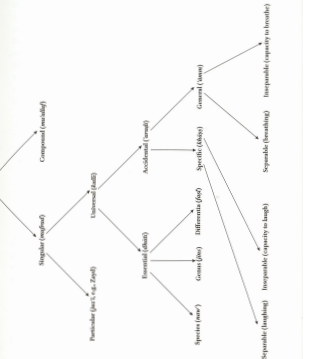


Diagram 1: Divisions of Utterances

aspects of concepts that are the building blocks for making assents. The second segment of the *Isagoge* (and numerous Islamic logic texts following Ibn Sīnā's model) deals with assents (*taṣdīqāt*); this includes the foundations of assents (*mabādī' al-taṣdīqāt*) and discussions on propositions (*qadāya*). The second segment on assents includes what later commentators categorized as the objectives of assents (*maqāṣid al-taṣdīqāt*); these objectives include all the ways that new propositions and a conclusion can be derived directly or indirectly (*istidlāl mubāshir wa-ghayr mubāshir*) from the foundational propositions. These include conversion (*ʿaks*), opposition (*tanāquḍ*), syllogisms (*qiyās*), and the five syllogistic arts (*al-ṣinaʿāt al-khams*) at the end of al-Abhari's *Isagoge*. This division of concepts and assents is outlined below.

1. Concepts
 - a. foundations of concepts (*mabādī' al-taṣawwūrāt*)
 - b. objectives of conceptual foundations (*maqāṣid al-taṣawwūrāt*)
2. Assents
 - a. foundations of assents (*mabādī' al-taṣdīqāt*)
 - b. objectives of assents (*maqāṣid al-taṣdīqāt*)

This model of dividing logic texts topically was later solidified through the work of Fakhr al-Dīn al-Rāzī, who merged theology with philosophy using some of the structural frameworks and divisions set by Ibn Sīnā. Post-classical Muslim theologians who came after al-Rāzī, like al-Bayḍawī, Sharf al-Jurjānī, al-Taftazānī, Ismail Gelenbevi, Mullā al-Fanārī, ʿAlī al-Qushjī (d. 879/1474), Shams al-Dīn al-Iṣfahānī, Sirāj al-Dīn al-Urmawī, al-Khunājī (d. 646/1248) and many others further developed a sophisticated discourse around matters of epistemology, a discourse that came to epitomize Muslim philosophical theologians of the seventh/thirteenth to twelfth/eighteenth centuries. When Meno's famous paradox of inquiry led to philosophical debates about the nature of knowledge, Muslim thinkers were at the forefront

of developing the field of epistemology in the framework of Islamic thought and were keenly interested in the implications this discussion posed in relation to the ability to know God and His laws.

For the purposes of understanding the *Isagoge*, concepts and assents can be explained simply. Concepts are bits of knowledge that pre-exist in our minds without our having to do any research. They could be matters that are self-evident in the sense that one knows them to be true without question, such as the sky is blue or fire is hot. Or, they could be acquired at some point in our lives (like the heat of fire), but once acquired, they are stored in our minds. Muslim thinkers argued that a foundation of concepts must exist in our minds in order to build new knowledge. Otherwise, without foundational concepts in the mind that serve as building blocks for further knowledge, the problem of infinite regress (*tasalsul*) arises; that is, the process in which one looks for a premise for another premise for another premise *ad infinitum* before any new conclusions can be drawn about anything. Al-Abhari's section on utterances, definitions, and expository statements deals with aspects of concepts (*taṣawwūrāt*).

Assents (*taṣdīqāt*) utilize information in the form of concepts to create correlations between these concepts, and these correlations lead to new information. Assents can take the form of propositional statements, in which a predicate is distributed to a subject. In English logic, these are known as **judgments**. Assents can also take the form of syllogisms that form correlations between axiomatic premises that are pre-established as true. In English logic, this is known as **inference**. In both cases we see that concepts are the building blocks through which assents are derived.

TRANSLATION

- [4] Expressions are either **singular** (*mufrad*), such as the word “human” (*insān*), which does not convey a partial meaning if it were divided into two parts [such as *in* and *sān*]. Or they [expressions] can be compound (*murakkaf*), such as [the expression] “rock thrower.”

EXPLANATORY NOTES

A singular word (*mufrad*) is a meaningful expression that cannot be further divided into more words that have meaning. For example, “garden” is a singular word. We cannot divide the word “garden” into “gar” and “den.” Other examples include words such as computer, table, and factory.⁴

By contrast, a compound word is composed of other words and potentially can be divided into words that have independent meanings. In English grammar, compound words are categorized as being open, closed, or hyphenated. Examples of open compound words include ice cream, real estate, high school, and full moon. Examples of closed compound words include grandmother, sunflower, footprint, and grasshopper. Examples of hyphenated compound words include part-time, long-term, and high-tech. Al-Abhari provides the example of the compound word “rock thrower.” This word can be divided further into “rock” and “thrower.”

⁴ For further reading, see Shams Inati, “Ibn Sina on Single Expressions,” in *Islamic Theology and Philosophy: Studies in Honor of George Hourani*, ed. Michael E. Marmura (Albany: State University of New York Press, 1984), 148–159.

TRANSLATION

- [5] A singular expression can be either **universal** (*kullī*), which is [an expression] that does not impede the conception of its meaning being shared among many, like the term “human.” Or it can be a **particular** (*juḡʿī*) [expression], which means it is an expression that prevents the conception of its meaning [being shared by many], like [for instance], “Zayd.”

EXPLANATORY NOTES

A universal (*kullī*) expression is one that can be applied to a number of different things. For example, the term “human” is universal in that Zaynab, ʿĀisha, and Zachary can all be included in this property of shared “humanity.” A particular (*juḡʿī*) expression is a type of expression that cannot be applied to a number of other things. In al-Abhari's example, the word “Zayd” refers to a specific person. This makes the word “Zayd” a particular expression. By contrast, the word “human” can refer to many people, including Zayd. Thus, it is a universal expression.

[6] Furthermore, a **universal** [expression] is either **essential** (*dhātī*), which means it constitutes the essential nature of each of [the] particulars [included in this universal term], such as [the word] “animal” in relation to “human” and “horse.” Or [a universal expression] is **accidental** (*‘araḍī*), which means it contradicts this [principle mentioned above], such as laughing in relation to humans.

[7] The **essential** can be used as an answer to what something is in terms of a [broadly] shared identity, such as the term animal in relation to humans and horses. And this is [called] a **genus** (*jūs*). [A genus] is described as a universal [property] that can be said of a variety of entities that differ in their true natures, [in] answer to [the question] of what it is.

[8] Alternatively, a [term] with both shared and specialized [properties] can be said to be an answer to the question, “what is it.” For example, [one might use the word] “human” in reference to both Zayd and ‘Amr. This is [called] the **species** (*naw*). It is described as a universal [term] that can be applied to numerous entities that do not differ in their true nature, [in] answer to [the question] of what it is.

[9] Or it could be that [one is not] responding [to the question] “what is it,” but is instead responding to [the question] “what thing is it, in its essence?” This is what distinguishes it from other things it shares a genus with, such as [the quality of being] “rational,” in regard to humans. This is called **differentia** (*faṣṭ*). It is described as a universal [property] that refers to an entity [in] answer to [the question] of “what is it in essence.”

[٦] وَالْعَلَى: إِمَّا ذَاتِي؛ وَهُوَ الَّذِي يَدْخُلُ فِي حَقِيقَةِ جُرْحَاتِهِ، كَالْحَيَوَانِ

بِالنَّسَبَةِ إِلَى الْإِنْسَانِ وَالْفَرَسِ، وَإِمَّا عَرَضِي، وَهُوَ الَّذِي يُخَالِفُهُ،

كَالضَّاحِكِ بِالنَّسَبَةِ إِلَى الْإِنْسَانِ.

[٧] وَالذَّاتِي: إِمَّا مَقُولٌ فِي جَوَابِ مَا هُوَ بِحَسَبِ الشَّرَكَةِ الْمُخَصَّةِ، كَالْحَيَوَانِ

بِالنَّسَبَةِ إِلَى الْإِنْسَانِ وَالْفَرَسِ، وَهُوَ الْجِنْسُ؛ وَيُرْسَمُ بِأَنَّهُ كُلُّ مَقُولٍ عَلَى

كَثِيرِينَ مُخْتَلِفِينَ بِالْحَقَائِقِ فِي جَوَابِ مَا هُوَ.

[٨] وَإِنَّمَا مَقُولٌ فِي جَوَابِ مَا هُوَ بِحَسَبِ الشَّرَكَةِ وَالْخُصُوصِيَّةِ مَعًا،

كَالْإِنْسَانِ بِالنَّسَبَةِ إِلَى زَيْدٍ وَعَمْرٍو، وَهُوَ النُّوعُ؛ وَيُرْسَمُ بِأَنَّهُ كُلُّ مَقُولٍ

عَلَى كَثِيرِينَ مُخْتَلِفِينَ بِالْعَمَدِ دُونَ الْحَقِيقَةِ فِي جَوَابِ مَا هُوَ.

[٩] وَإِنَّمَا غَيْرُ مَقُولٍ فِي جَوَابِ مَا هُوَ، بَلْ مَقُولٌ فِي جَوَابِ أَيِّ شَيْءٍ هُوَ فِي

ذَاتِهِ، وَهُوَ الَّذِي يُعَيِّرُ الشَّيْءَ عَمَّا يُشَارِكُهُ فِي الْجِنْسِ، كَالنَّاطِقِ بِالنَّسَبَةِ

إِلَى الْإِنْسَانِ، وَهُوَ الْفَعْلُ؛ وَيُرْسَمُ بِأَنَّهُ كُلُّ يَقَالُ عَلَى الشَّيْءِ فِي جَوَابِ

أَيِّ شَيْءٍ هُوَ فِي ذَاتِهِ.

TRANSLATION

[6] Furthermore, a **universal** [expression] is either **essential** (*dhātī*), which means it constitutes the essential nature of each of [the] particulars [included in this universal term], such as [the word] “animal” in relation to “human” and “horse.” Or [a universal expression] is **accidental** (*‘araḍī*), which means it contradicts this [principle mentioned above], such as laughing in relation to humans.⁵

EXPLANATORY NOTES

Substances and Accidents: *Jawhar*, *dhāt*, and *‘araḍ*

Muslim philosophers classified the modes of being into that of *jawhar*, *dhāt*, and *‘araḍ*. Ibn Sīnā devoted a significant proportion of his writing to the topic of existence (*wujūd*) as it pertains to God, the universe, and the world. The various arguments for the existence of God were presented in different ways by a vast number of philosophical theologians or *kalām* specialists who built on the ideas presented by Ibn Sīnā in his *Shifā’*. In al-Abhari’s treatise on logic, he introduces the concepts of substances and accidents as he would to a beginning student in the field of Islamic studies.

This theory of the way things can exist is rooted in Aristotelian logic, which states that all things can either exist “in themselves” or must depend on the existence of another entity in order to “exist in others.” Things like humans, trees, and cars can be considered to exist

⁵ Laughing can be a quality of some humans but it is not essential to their humanity and therefore it is an accident (*‘araḍ*).

in themselves without depending on the existence of another thing to make them exist. This is known as a primary substance (*jawhar*). Entities such as “red,” “fifty pounds,” and “small” must have another object in which they exist. A shirt can be red, a boy can be fifty pounds, and a car can be small. None of these things can exist independently in themselves. It is not possible to see fifty pounds walking down a street or red floating around a room. Their existence is dependent on the substance that they inhabit. Such properties that are dependent on a substance to exist are called accidents (*‘araḍ*).

Substances are also divided into two types: Primary and secondary. Primary substances are the specific individual things that are being referred to, such as Zayd. Secondary substances are universal properties that give a thing its intrinsic nature. The secondary substance of Zayd is humanity. It is a shared idea that people have, that makes a car still a car, or makes a man still a man, despite their various accidents, like shape, color, and appearance. This shared “carness,” “manness,” “animalness,” “treeness,” etc. are known as secondary substances (*dhāt*). These secondary substances are also the *essence* of things, that is, this is what gives them their identity and makes them what they are (*māhiyya*). The essence that makes a thing what it is, is referred to as “quiddity,” which is the usual translation of *māhiyya*. Hence, in English texts, the words *dhāt* and *essence* (which can be another aspect of an object’s “whatness” or quiddity) are often used interchangeably. In later studies in metaphysics and theology, we can see that theologians and philosophers emphasize the terms *dhāt* and *māhiyya* in different ways to describe the existences of substances. While all of this may seem obscure to a non-specialist, understanding these concepts is essential to reading later theological texts that discuss topics such as the oneness of God, God’s attributes, and the relationship of the world to the divine.

The Ten Categories of Being (*maqūlāt*)

The ten categories of being are intellectual tools we can use to think about topics related to Islamic philosophy and theology. These

categories originated in the works of Ibn Sīnā, who utilized Aristotle’s writings in his *Categories* to list the ways in which a substance or accidents can be said to exist (*maqūlāt*).⁶ The Arabic term *maqūlāt* comes from the root q-w-l which means to speak (*maqūlāt* should not be confused with the term *ma’qūlāt*, which refers to another concept known as intelligibles).

The first of the ten categories by which to describe something as existing is as a substance. The other nine categories describe ways that accidents can exist based on their relationship to a substance. The ten categories are as follows.

1. **Substance** (*jawhar*): “Whatness” (*māhiyya*) or the essence of an object. This is what makes it what it is.
2. **Quantity** (*kammiyya*): How many? How much? For example, when we say “two apples,” two is an accident whose existence is dependent on the existence of the apples, which are substances.
3. **Quality** (*hayfiyya*): This is the qualification of a thing that includes accidents such as a state (pleasant), color (red), and shape (square).
4. **Relation** (*idāfa*): This is the relational connections between objects; for example, on top of, after, or before.
5. **Action** (*fiʿl*): This specifies what a substance is doing; for example, walking, talking, or praying.
6. **Affective** (*infīʿāl*): This is what is being done to a substance; for example, being pressured, broken, or mended.
7. **Location** (*makān*): This is the place where a substance is located; for example, at school, in the United States, or in a car.

⁶ Early Arab logicians used the Greek term *categoryas* in Arabic (in their translation of Aristotle’s *Categories*). Al-Fārābī translated the term as *maqūlāt* (“that which can be said of something”).

8. **Position** (*waḍʿ*): This refers to the way a substance is positioned; for example, flat, sitting, lying down, resting, or upright.
9. **Time** (*samān*): This refers to when a substance is doing something; for example, walking in the morning, or arriving in an hour.
10. **Possession** (*mulkiyya*): This is the relation of an object to another with regard to possession; for example, ‘Ā’isha’s raincoat.

Essential (*dhātī*) and Accidental (*‘araḍī*) Properties

A universal (*kullī*) word used to describe a thing can be a property that is essential (*dhātī*) to its identity as that thing or it can be a property that is incidental (i.e., not essential to its identity). The non-essential properties are referred to as “accidents” (*‘araḍ*). For example, although the property of being human is universal, in that it can be applied to a wide range of people, it is still essential to Zayd being who he is. If Zayd were not human, he could not be Zayd. By contrast, laughing is an “accidental” property, in that it is not essential to Zayd’s identity that he laugh. Humans are distinguished from other animals in that they have the capacity (*quwwa*) to laugh and actually do laugh. However, laughing is not an essential property that defines one’s humanity, it is an accidental (or perhaps a functionally incidental) property. If Zayd never laughed, he would still be Zayd.

الْعَلَى: إِمَّا ذَاتِي؛ وَهُوَ الَّذِي يَدْخُلُ فِي حَقِيقَةِ جُرْحَاتِهِ، كَالْحَيَوَانِ بِالنَّسَبَةِ إِلَى الْإِنْسَانِ وَالْفَرَسِ، وَإِمَّا عَرَضِي، وَهُوَ الَّذِي يُخَالِفُهُ، كَالضَّاحِكِ بِالنَّسَبَةِ إِلَى الْإِنْسَانِ.

TRANSLATION

[7] The **essential** can be used as an answer to what something is in terms of a [broadly] shared identity, such as the term animal in relation to humans and horses. And this is [called] a **genus** (*jūs*). [A genus] is described as a universal [property] that can be said of a variety of entities that differ in their true natures, [in] answer to [the question] of what it is.

[8] Alternatively, a [term] with both shared and specialized [properties] can be said to be an answer to the question, “what is it.” For example, [one might use the word] “human” in reference to both Zayd and ‘Amr. This is [called] the **species** (*naw*). It is described as a universal [term] that can be applied to numerous entities that do not differ in their true nature, [in] answer to [the question], of what it is.

[9] Or it could be that [one is not] responding [to the question] “what is it,” but is instead responding to [the question] “what thing is it, in its essence?” This is what distinguishes it from other things it shares a genus with, such as [the quality of being] rational, in regard to humans. This is called **differentia** (*faṣṭ*). It is described as a universal [property] that refers to an entity [in] answer to [the question] of “what is it in essence.”

الْعَلَى: إِمَّا ذَاتِي؛ وَهُوَ الَّذِي يَدْخُلُ فِي حَقِيقَةِ جُرْحَاتِهِ، كَالْحَيَوَانِ بِالنَّسَبَةِ إِلَى الْإِنْسَانِ وَالْفَرَسِ، وَإِمَّا عَرَضِي، وَهُوَ الَّذِي يُخَالِفُهُ، كَالضَّاحِكِ بِالنَّسَبَةِ إِلَى الْإِنْسَانِ.

وَالْعَلَى: إِمَّا ذَاتِي؛ وَهُوَ الَّذِي يَدْخُلُ فِي حَقِيقَةِ جُرْحَاتِهِ، كَالْحَيَوَانِ بِالنَّسَبَةِ إِلَى الْإِنْسَانِ وَالْفَرَسِ، وَإِمَّا عَرَضِي، وَهُوَ الَّذِي يُخَالِفُهُ، كَالضَّاحِكِ بِالنَّسَبَةِ إِلَى الْإِنْسَانِ.

⁷ Aristotle challenged his teacher Plato’s theory of knowledge which divided ways of knowing into that which is visible vs. that which is intelligible.

EXPLANATORY NOTES

The Five Predicables (*kulliyāt al-khams*)

The *Isagoge* includes discussions about what are known as the five predicables (Latin, *quinque voces*) of traditional logic. The five predicables describe the five ways in which one can refer to something; these ultimately lead to a definition of that entity. These are different from categories, because categories list what (time, quantity, quality) can be said to describe a subject, rather than ways of referring to the same thing—ways that are necessary to *define* it. The five predicables are genus (*jūs*), species (*naw*), differentia (*faṣṭ*), property (*khāṣṣa*), and accident (*‘araḍ* *‘amm*). Both “property” and “accident” are considered accidental universals for reasons that are explained later.

For example, if we ask, how can we refer to Zayd, we could say that he is an animal or we could be more specific and say that he is a human or we could be even more specific and say that he is a boy, and so on by adding specific accidents to help the listener identify the particular animal who is a human, who is a boy, who is Zayd. This can be confusing because in common language, these too can be described as “categories”—in this case they are categories of specificity. Each of these general and more specific ways of describing Zayd reflect *how* we can refer to Zayd. In Arabic logic these five predicables are known as the “five universals” (*kulliyāt al-khams*). This is because each of the five predicables refers to a universal framework that is shared with other groups (as in genus, species, and differentia) or to accidents that are composed of universal properties that can apply specifically to the entity referenced.

The question “what is it” (*mā huwa*) originally developed from the heuristic inquiry methods proposed by Aristotle in his *Posterior Analytics*; Ibn Sīnā later expanded on these methods in his *Shifā’*.⁷

⁷ Aristotle challenged his teacher Plato’s theory of knowledge which divided ways of knowing into that which is visible vs. that which is intelligible.

Muslim thinkers have examined, among other questions, the connection between existence (*wujūd*) and its “whatness” or quiddity (*māhiyya*). The quiddity (or lack thereof) of God’s existence (*wujūd*) in contrast to human existence is a foundational matter of debate in Islamic theology (*kalām*) and its conception of Islamic monotheism.

Thus, we see al-Abhari identifying what makes something what it is by describing shared traits of similar objects; these in turn portray the cognitive frameworks by which a specific thing is known (that is, through its different forms of affiliation with each of the five predicables). For instance, humans and horses are both animals (a genus) because they share the quality of being living beings (unlike clouds or rocks). Zayd and ‘Amr, by contrast, are both described as “human” (a species) based on their shared trait of being rational animals.

Differentia (*faṣṭ*) is an attribute that distinguishes one species of things from another. This thing that distinguishes it is said to be an essential quality or an essential “difference” that answers the question “which is it” rather than “what is it?” For instance, once we have further defined that Zayd is an animal (genus) and a human (species), we need another way to describe Zayd to distinguish him from ‘Amr or ‘Ā’isha. For example, if ‘Amr and ‘Ā’isha have different mothers, his distinguishing trait is that he is the son of Maryam. This makes “son of Maryam” a differentia in this case.

Aristotle objected to Plato’s view that sensory knowledge was lesser in its reality and truth than types of knowledge that are derived through thought and philosophical understanding. Aristotle offered an alternative method of acquiring knowledge; namely, through demonstrative science, which held that information gathered from the sensory world is more true than theory and ideas that reside in the mind’s perception.

- [10] As for accidental [universals], their separation from the quiddity (*māhiyya*) [of an entity] is inhibited and this is an **attached accident** (*ʿaraḍ lāzim*), or their separation is not inhibited and this is a **detached accident** (*ʿaraḍ al-mufāriq*). Each of these two [types of accidents] is specific to one true nature and this is the **property** (*khāṣṣa*). For example, [this could be] the capacity (*quwwa*) and act (*fiʿl*) of laughing in relation to a human. It [laughter] is described as a universal that can be attributed to those with a single true nature [i.e., humans] as an accidental trait.

- [11] Or it [the accidental universal] can be attributed to more than one true nature [e.g., not exclusively to humans] and is therefore a **general accident** (*ʿaraḍ ʾamm*). This is like breathing in [terms of] capacity (*quwwa*) and action (*fiʿl*) for humans and [for] others from [among] the animals. This [accidental universal] is described as a universal that can be applied to a variety of true natures (*haqāʾiq*) as an accidental trait.

[١٠] وَأَمَّا الْعَرَضِيُّ؛ فَإِمَّا أَنْ يَمْتَنِعَ الْفِكَاكَةُ عَنِ الْمَاهِيَّةِ وَهُوَ الْعَرَضُ اللَّازِمُ،

أَوْ لَا يَمْتَنِعَ وَهُوَ الْعَرَضُ الْمُفَارِقُ. وَكُلُّ وَاحِدٍ مِنْهُمَا إِذَا أَنْ يَخْتَصَّ

بِحَقِيقَةٍ وَاحِدَةٍ، وَهِيَ الْخَاصَّةُ، كَالصَّاحِلِ بِالْقُوَّةِ وَبِالْفِعْلِ، بِالنَّسَبَةِ إِلَى

الْإِنْسَانِ. وَتُرْسَمُ بِأَنَّهَا كَلْبِيَّةٌ تُقَالُ عَلَى مَا تَحْتَ حَقِيقَةٍ وَاحِدَةٍ فَقَطَّ قَوْلُ

عَرَضِيًّا.

[١١] وَإِمَّا أَنْ يَتِمَّ حَقَائِقُ قُوَّةٍ وَاحِدَةٍ، وَهُوَ الْعَرَضُ الْعَامُّ، كَالْمُتَنَفِّسِ بِالْقُوَّةِ

وَبِالْفِعْلِ لِلْإِنْسَانِ وَعَنْهٍ مِنَ الْحَيَوَانَاتِ. وَيُرْسَمُ بِأَنَّهُ كُلِّيٌّ يُقَالُ عَلَى مَا

تَحْتَ حَقَائِقَ مُخْتَلِفَةٍ قَوْلُ عَرَضِيًّا.

TRANSLATION

- [10] As for accidental [universals], their separation from the quiddity (*māhiyya*) [of an entity] is inhibited and this is an **attached accident** (*ʿaraḍ lāzim*), or their separation is not inhibited and this is a **detached accident** (*ʿaraḍ al-mufāriq*). Each of these two [types of accidents] is specific to one true nature and this is the **property** (*khāṣṣa*). For example, [this could be] the capacity (*quwwa*) and act (*fiʿl*) of laughing in relation to a human. It [laughter] is described as a universal that can be attributed to those with a single true nature [i.e., humans] as an accidental trait.

- [11] Or it [the accidental universal] can be attributed to more than one true nature [e.g., not exclusively to humans] and is therefore a **general accident** (*ʿaraḍ al-ʾamm*). This is like breathing in [terms of] capacity (*quwwa*) and action (*fiʿl*) for humans and [for] others from [among] the animals. This [accidental universal] is described as a universal that can be applied to a variety of true natures (*haqāʾiq*) as an accidental trait.

EXPLANATORY NOTES

As noted, an accident (*ʿaraḍ*) is a trait that is not essential to the object's identity (i.e., quiddity, *māhiyya*). A trait is considered universal because it is a non-essential property that can be applied to a variety of objects, not only the specific object described. Accidents can be specific (*khāṣṣ*) to one group of many individuals that fit into this group, or accidents can be general (*ʾamm*) and apply to individual entities in the group as well as others outside it. An accident that is specific to one group

is known as a property (*khāṣṣa*) in the context of the five predicables (*kulliyāt al-khams*). Al-Abhari uses the term specific accident (*ʿaraḍ khāṣṣa*) to convey this general idea.

A detached specific accident (*ʿaraḍ khāṣṣ mufāriq*) is one that can be separated from the object described, as in al-Abhari's example of a laughing human. Laughter is universal to many humans and not just the specific person described, therefore it is a universal. It is specific enough that (according to this text), laughter can only be applied to humans and therefore it defines a particularity of the true nature (*haqāʾiq*) of humans while still being universal or common enough that it can potentially be applied to every human on the planet. Therefore, we can still say that laughter is a universal (*kullī*) trait. Laughter is also non-essential or non-conditional for a human to be human. Therefore, it is an accident (*ʿaraḍ*).

The term *haqāʾiq* ("true nature") refers to a group of the same things, a group whose "sameness" is based on the true nature of those entities. Thus, despite the many differences among humankind, humans still possess a true nature that places them in the category of humans. Al-Abhari is examining the accidents—both specific (*khāṣṣ*) and general (*ʾamm*)—that apply to the true nature (*haqāʾiq*) of humans.

Thus, accidents are further divided into general and specific. A general accident (*ʿaraḍ ʾamm*), like breathing, is a property that Zayd shares with other non-humans, like horses and cats. Furthermore, breathing is considered an accidental (*ʿaraḍī*) universal and not an essential (*dhātī*) property that defines Zayd's humanity because it is not an essential property that distinguishes Zayd or humans as human.

However, the capacity (*quwwa*) to breathe is necessary to Zayd's staying alive. This makes the *potentiality* to breathe an inseparable general accident (*ʿaraḍ ʾamm lāzim*). However, in terms of action (*fiʿl*), it is possible for Zayd to hold his breath for a while. Thus, the act of breathing is separate, making it a separate general accident (*ʿaraḍ ʾamm mufāriq*).

By contrast, laughing is an accident in that it does not define one's humanity. Yet, it is still considered unique to humans. Therefore, laughter is a specific accident (*ʿaraḍ khāṣṣ*), that is, a non-essential property specific to humans. There is yet another dimension to this.

The act (*fiʿl*) of laughter is not necessary for an individual human like Zayd. It is only his capacity (*quwwa*) to laugh that is deemed necessary and thus the accident is attached (*lāzim*) to Zayd's identification as a human. That is, it is entirely possible for Zayd to be completely serious and never laugh in his entire life, despite his human capacity to laugh. This makes the *act* (*fiʿl*) of laughter a specific separable accident (*ʿaraḍ khāṣṣ mufāriq*). However, the accidental property related to laughter that is inseparable from Zayd is his capacity or potential (*quwwa*) to laugh. Thus, even though he may never actually laugh, one of his uniquely human traits is that he has the ability to laugh, unlike fish or cats who do not have the capacity to laugh and have not ever laughed in actuality. This makes the capacity (*quwwa*) to laugh a specific inseparable accident (*ʿaraḍ khāṣṣ lāzim*) while the act (*fiʿl*) of laughter remains a specific separable accident (*ʿaraḍ khāṣṣ mufāriq*).⁸

This is illustrated below.

Universals

1. Essential (*dhātī*)
 - a. Genus (*jins*): e.g., using "animal" to refer to humans
 - b. Species (*nawʿ*): e.g., humans
 - c. Differentia (*faṣl*): e.g., "rational" in reference to humans
2. Accidental
 - a. Property (*khāṣṣa*)
 - i. Separable (*mufāriq*): e.g., the act (*fiʿl*) of laughing with regard to humans

⁸ al-Maghniṣi, *Mughni al-ṭullāb*, 114–119.

- ii. Inseparable (*lāzim*): e.g., the capacity (*quwwa*) to laugh with regard to humans

b. General Accidents (*ʿaraḍ ʾamm*)

- i. Separable (*mufāriq*): e.g., the act (*fiʿl*) of breathing with regard to humans
- ii. Inseparable (*lāzim*): e.g., the capacity (*quwwa*) to breathe with regard to humans

Expository Statement

- [12] **Definition** (*hadd*): A statement that signifies the quiddity (*māhiya*) of a thing. It is composed of the close genus (*jins*) and close differentia (*faṣl*) such as “rational animal” to [define] a human. This is also a **complete definition** (*hadd al-tāmm*).
- [13] **Incomplete Definition** (*al-ḥadd al-nāqis*): It is composed of a distant genus of a thing and a close differentia, such as “rational body” in reference to a human.
- [14] **Complete Description** (*al-rasm al-tāmm*): It is composed of a close genus and a specific inseparable property (*khawāssihī al-lāzima*) such as a “laughing animal” to define a human.
- [15] **Incomplete Description** (*al-rasm al-nāqis*): It is composed of accidents whose combinations are specific to one true nature. For example, describing a human by saying that he walks on two feet, [he has] wide nails, a hairless body, [he] stands upright, and laughs by nature.

الْقَوْلُ السَّارِحُ

- [١٢] الْحَدُّ: قَوْلٌ ذَاكَ عَلَى مَا هِيَ الشَّيْءُ، وَهُوَ الَّذِي يَتَرَكَّبُ مِنْ جُنْسٍ الشَّيْءِ وَفَضْلِهِ الْقَرِيبَيْنِ، كَالْحَيَوَانِ النَّاطِقِ بِالنَّسَبَةِ إِلَى الْإِنْسَانِ. وَهُوَ الْحَدُّ التَّامُّ.
- [١٣] وَالْحَدُّ النَّاقِضُ : وَهُوَ الَّذِي يَتَرَكَّبُ مِنْ جُنْسٍ الشَّيْءِ الْبَعِيدِ وَفَضْلِهِ الْقَرِيبِ، كَالْجِسْمِ النَّاطِقِ بِالنَّسَبَةِ إِلَى الْإِنْسَانِ.
- [١٤] وَالرَّسْمُ التَّامُّ: وَهُوَ الَّذِي يَتَرَكَّبُ مِنْ جُنْسٍ الشَّيْءِ الْقَرِيبِ وَخَوَاصِّهِ الْأَزَوَّةِ، كَالْحَيَوَانِ الصَّاحِبِ فِي تَعْرِيفِ الْإِنْسَانِ.
- [١٥] وَالرَّسْمُ النَّاقِضُ: وَهُوَ الَّذِي يَتَرَكَّبُ مِنْ عَرَضِيَّاتٍ تَخْتَصُّ جُمْلَتَهَا بِحَقِيقَةٍ وَاحِدَةٍ، كَقَوْلِنَا فِي تَعْرِيفِ الْإِنْسَانِ: إِنَّهُ مَائِسٌ عَلَى قَدَمَيْهِ، غَرِيضٌ الْأَطْفَالِ، بَادِي الْبَشَرَةِ، مُسْتَقِيمُ الْقَامَةِ، صَحَّاحٌ بِالطَّلْبِ.

TRANSLATION

Expository Statement

- [12] **Definition** (*hadd*): A statement that signifies the quiddity (*māhiya*) of a thing. It is composed of the close genus (*jins*) and close differentia (*faṣl*) such as “rational animal” to [define] a human. This is also a **complete definition** (*hadd al-tāmm*).
- [13] **Incomplete Definition** (*al-ḥadd al-nāqis*): It is composed of a distant genus of a thing and a close differentia, such as “rational body” in reference to a human.
- [14] **Complete Description** (*al-rasm al-tāmm*): It is composed of a close genus and a specific inseparable property (*khawāssihī al-lāzima*) such as “laughing animal” to define a human.
- [15] **Incomplete Description** (*al-rasm al-nāqis*): It is composed of accidents whose combinations are specific to one true nature. For example, describing a human by saying that he walks on two feet, [he has] wide nails, a hairless body, [he] stands upright, and laughs by nature.

EXPLANATORY NOTES

A definition that is complete describes exactly what an object is by using the closest genus possible and a specific difference, as a distinguishing feature to exclude the possibility of it being an alternative object. As mentioned in the text, a genus is described as a universal category that can be applied to a variety of entities that differ in their true nature (*mukhtalifīn bi-l-ḥaqāʾiq*), in response to the question “what is it.” A close genus means using a universal category that can

to refer to the object. Instead, we use two or more accidents whose combination refers to the true nature of one particular object. For example, referring to a human by describing him as “he who walks on two feet, has a hairless body, stands upright, and laughs by nature.” The combination of these accidents points to one possible object, namely humans. The combination of these accidents reflects one true nature (*ḥaqīqa wāḥida*), that of humans. The result is another way to refer to humans through a combination of accidents, although this is considered a less precise method and therefore an “incomplete” (*nāqis*) description.

be applied to a number of different types of objects and narrowing it down as much as possible without losing its universality. Thus, for example, rather than saying a created being (*makhḷūq*), the genus is further narrowed to specify animal, because things like plants and rocks can also be considered in the category of “created beings.”

The genus is then coupled with a specific difference that describes the object in a way that excludes everything other than the object described. Thus, to the genus of “animal” we would add the differentia (*faṣl*) of rationality. Among animals, humans are distinguished by their capacity to rationalize. Thus, al-Abharī provides the term “rational animal” (*ḥaywān nāṭiq*) as a complete definition in which the combination of these two words describe the object accurately and precisely.

An incomplete definition refers to a genus that is broader in its inclusion of the varieties of objects in it. So, for example, a “rational created being” (*makhḷūq nāṭiq*) could still refer to humans, but since created beings can include a wider variety of objects such as plants and mountains, which go beyond the close genus of animal, its lack of precision causes it to be considered an incomplete definition (*ḥadd nāqis*).

The next two ways of describing something is by description. A complete description is defined as being a combination of a close genus (as described in the previous discussion) and as an attached accident that is particular to an object's true nature; for example, using a laughing animal to describe humans. Animal is a close genus and laughter is a non-essential trait (therefore an accident) that is unique to humans; that is, laughter is a specific attached accident (*ʿaraḍ khāṣṣ lāzim*). Another example might be to say a “striped animal.” This reference brings to mind a zebra. Yet it is possible for a zebra to be born without stripes and still be a zebra. Therefore, its stripes are non-essential to its “zebra-hood” (quiddity; *māhiya*). This means stripes are an attached non-essential trait of zebras.

Finally, a fourth way to refer to objects is with an incomplete description. In this case we do not use an essential property or genus

Propositions

- [16] A proposition (*qaḍīyya*) is a statement about which it is valid to say to its claimant that he is truthful or untruthful [i.e., in his statement]. Additionally, it is either a categorical proposition (*ḥamlīyya*), as in the phrase: “Zayd is a writer,” or it is a conjunctive conditional proposition (*shartīyyatun muṭṭaṣila*), as in the statement: “If the sun has risen, it is daytime.” Or it is a disjunctive conditional proposition (*shartīyyatun munfaṣila*), as in the statement: “Numbers are either even or odd.” The first part of the categorical proposition (*ḥamlīyya*) is known as the subject term (*mawḍūʿ*) and the second [part] is the predicate term (*maḥmūl*). The first part of the conditional [proposition] is termed the antecedent (*muqaddam*) and the second part is the consequent (*tālī*).

- [17] A categorical proposition is either affirmative (*mājība*) as in our statement, “Zayd is a writer,” or it is negative (*sālība*), as in our statement, “Zayd is not a writer.” Additionally, each of these is either **singular** (*makhṣūṣa*) as we mentioned or a **quantified universal proposition** (*kullīyya musawwara*), as in our statement, “every human is a writer” and “no human is a writer.” Or [each of these propositions is] a **quantified particular proposition** (*juzʿīyya musawwara*), as in our statement, “some humans are writers” and “some humans are not writers.” Or it can be unlike these, in which case it is referred to as indefinite (*muhmala*), as in our statement, “the human is a writer” and “the human is not a writer.”

الْقَضَايَا

[١٦] الْقَضِيَّةُ: قَوْلٌ يَصِحُّ أَنْ يُقَالَ لِغَايِلِهِ: إِنَّهُ صَادِقٌ فِيهِ أَوْ كَاذِبٌ فِيهِ. وَهِيَ:

إِمَّا حَمَلِيَّةٌ، كَقَوْلِنَا: «زَيْدٌ كَاتِبٌ». وَإِمَّا شَرْطِيَّةٌ مُتَّصِلَةٌ، كَقَوْلِنَا: «إِنْ

كَانَتِ الشَّمْسُ طَالِعَةً فَالْتِهَارُ مُوجُودٌ». وَإِمَّا شَرْطِيَّةٌ مُنْفَصِلَةٌ، كَقَوْلِنَا:

«الْعَدَدُ إِمَّا زَوْجٌ وَإِمَّا فَرْدٌ». وَالْجُزْءُ الْكُلُّ مِنَ الْحَدِيثِ يُسَمَّى مُؤَصَّوَعًا،

وَالثَّانِي مَحْمُولٌ. وَالْجُزْءُ الْكُلُّ مِنَ الشَّرْطِيَّةِ يُسَمَّى مُقَدِّمًا، وَالثَّانِي

تَالِيًا.

[١٧] وَالْقَضِيَّةُ: إِمَّا مُوجِبَةٌ، كَقَوْلِنَا: «زَيْدٌ كَاتِبٌ». وَإِمَّا سَالِيَّةٌ، كَقَوْلِنَا: «زَيْدٌ

لَيْسَ بِكَاتِبٍ». وَكُلُّ وَاحِدَةٍ مِنْهَا إِمَّا عَصُوصَةٌ كَمَا ذَكَرْنَا، وَإِمَّا كَلِّيَّةٌ

مُسَوَّرَةٌ، كَقَوْلِنَا: «كُلُّ إِنْسَانٍ كَاتِبٌ» وَ «لَا خَيْرَ مِنَ الْإِنْسَانِ بِكَاتِبٍ».

وَإِمَّا جُزْئِيَّةٌ مُسَوَّرَةٌ، كَقَوْلِنَا: «بَعْضُ الْإِنْسَانِ كَاتِبٌ» وَ «بَعْضُ الْإِنْسَانِ

لَيْسَ بِكَاتِبٍ». وَإِمَّا أَنْ لَا يَكُونُ كَذَلِكَ، وَتُسَمَّى مُهْمَلَةً، كَقَوْلِنَا: «الْإِنْسَانُ

كَاتِبٌ» وَ «الْإِنْسَانُ لَيْسَ بِكَاتِبٍ».

TRANSLATION

Propositions

- [16] A proposition (*qaḍīyya*) is a statement about which it is valid to say to its claimant that he is truthful or untruthful [i.e., in his statement]. Additionally, it is either a categorical proposition (*ḥamlīyya*), as in the phrase: “Zayd is a writer,” or it is a conjunctive conditional proposition (*shartīyyatun muṭṭaṣila*), as in the statement: “If the sun has risen, it is daytime.” Or it is a disjunctive conditional proposition (*shartīyyatun munfaṣila*), as in the statement: “Numbers are either even or odd.” The first part of the categorical proposition (*ḥamlīyya*) is known as the subject term (*mawḍūʿ*) and the second [part] is the predicate term (*maḥmūl*). The first part of the conditional [proposition] is termed the antecedent (*muqaddam*) and the second part is the consequent (*tālī*).

EXPLANATORY NOTES

This section begins with what is known as a *qaḍīyya* or what logicians refer to as a **propositional statement**. To test whether or not a statement is a proposition, we check whether it can be true or false. Statements like the sky is red, this shirt is blue, and bears like honey are all statements that can be either true or false. Examples of statements that cannot be verified or falsified include questions like “How are you?,” or imperative statements such as “Lock the door.” Propositional statements take three forms which al-Abhari outlines.

The first is what is referred to in English logic texts as a “**categorical proposition**,” which al-Abhari refers to as *al-qaḍīyya al-ḥamlīyya*. The

term categorical proposition comes from the concept that each term used in language comes from what is known as a “categorical term.” A categorical term is a noun or noun phrase. Zayd and writer are each categorical terms, when examined separately in and of themselves. A proposition links these two terms by claiming a factual relationship between them that can be true or false.

Furthermore, categorical terms in categorical propositions are divided into two further components.

One component is the subject term (*mawḍūʿ*) and the second component is the predicate term (*maḥmūl*). The term *maḥmūl* (from the root ḥ-m-l, “to carry”) is preferred over the Arabic grammatical term for predicate (*khabar*) because of the concept of distribution. In a categorical proposition the predicate has information that is “carried over” or distributed to each of the members of the first categorical term, which is the subject. Thus, the predicate is *maḥmūl* (“carried”). In English we say it is “distributed.” In the example above, *Zaydun kātibun* (“Zayd is a writer”), Zayd is the *mawḍūʿ* (subject), while writer (*kātibun*) is the predicate term (*maḥmūl*). The informative quality of the predicate term, writer (*kātibun*), is “carried over” by distributing information about Zayd.

One may ask, what happens if the propositional statement is a negation, such as, “Zayd is not a writer.” In this case, Zayd may still be the subject, but since his status as a writer is denied, is writer still “carrying” a meaning that is being “distributed” to Zayd. Is writer still a *maḥmūl*? Based on commentators on the *Isagoge*, the answer to this question is that the predicate (“is not a writer”) still carries or distributes a meaning which is in the negative. That is, “writer” is still considered a *maḥmūl* because it still gives information about Zayd, even if the information is a statement of negation of the predicate (*maḥmūl*). Negative statements are still referred to as composites of a subject (*mawḍūʿ*) and predicate (*maḥmūl*).

A **conjunctive conditional proposition** (*shartīyyatun muṭṭaṣila*) means that in a statement, “If A then B,” A and B must both be true

in order for the statement to be true. In the example above, “if the sun is in the sky then it is daytime,” both the antecedent (A) and the consequent (B) must be true at the same time. Thus the negation of A would also result in the negation of B. So, if the sun is not in the sky, then it is dark or it is not daytime. That is, in a conjunctive conditional proposition, both conjuncts must be true for the entire statement to be true.

A strong **disjunctive conditional proposition** (*shartīyyatun munfaṣila*) is a conditional statement in which only one of the two parts of the conditional proposition can be true, and both cannot be true at the same time. For example, a number cannot be both even and odd. It must be either even or odd.

Logicians make a distinction between strong disjunctive propositions in which only one of the parts of the “either/or” statement can be true, as in the conditional statements above, and weak disjunctive propositions that are non-conditional; in these it is possible for both parts of the statement to be true. For example, if we say, “the traveler would like to rest or eat,” it is possible for the traveler to both rest and eat. This is categorized as a weak disjunctive proposition because the opposition between the two segments is not imperative.

Additionally, in grammar, conditional sentences are often divided into an “if clause” or condition for the first part and a second part, which is the “main clause” or the result. In logic, the former is referred to as the antecedent (*muqaddam*) and the latter is the consequent (*tālī*). For example, in the sentence “If the sun is out, then it is daytime,” “If the sun is out” is the antecedent (*muqaddam*) and “then it is daytime” is the consequent (*tālī*).

TRANSLATION

- [17] A categorical proposition is either affirmative (*mājība*) as in our statement, “Zayd is a writer,” or it is negative (*sālība*), as in our statement, “Zayd is not a writer.” Additionally, each of these is either **singular** (*makhṣūṣa*) as we mentioned or a **quantified universal proposition** (*kullīyya musawwara*), as in our statement, “every human is a writer” and “no human is a writer.” Or [each of these propositions is] a **quantified particular proposition** (*juzʿīyya musawwara*), as in our statement, “some humans are writers” and “some humans are not writers.” Or it can be unlike these, in which case it is referred to as indefinite (*muhmala*), as in our statement, “the human is a writer” and “the human is not a writer.”

EXPLANATORY NOTES

The first section refers to what is known as the “quality” of propositions that either affirm or deny something. An affirmative (*mājība*) proposition affirms the connection or equivalence between the subject and the predicate of the categorical proposition. A categorical proposition that is negative (*sālība*) denies the connection or equivalence of the subject and predicate. Al-Abhari states that categorical propositions must be either positive or negative. The two examples provided were “Zayd is a writer” and “Zayd is not a writer.”

Each of these statements are then divided into the following three categories.

- 1) **Singular Categorical Propositions** (*qaḍīyya makhṣūṣa*): While al-Abhari uses the term *makhṣūṣa* to mean specified, the technical term used in English in the context of logic is “singular.” This

means that the exact subject who is doing something is a specific or singular individual. In the example “Zayd is a writer,” Zayd is the specific individual who is identified in this categorical proposition, thus “Zayd” gives it a precise meaning. This means that Zayd, and not Zaynab or Aḥmad or anyone else, is referred to as a writer.

- 2) **Quantified Universal Propositions** (*kullīyatun musawwara*): These are statements in which the subject is linked to a universal term that indicates “how much,” or what logicians refer to as the “quantity” of something. Subjects of a proposition, such as “all people,” or the use of what is known in Arabic grammar as the *lām al-istighrāq*, which is the use of “the” (that is, the indefinite article) to mean the generality of everything that falls under the word that follows “the” is in this category when it is clear that the word “the” (*al-*) is being used in this way. This clarification distinguishes it from indefinite propositions we see below.

In Arabic, the word *musawwara* literally means restricted. It may not seem that words like “all” and “every” are restrictive in meaning, but they are restrictive in the sense of “fencing in” or “surrounding” a subject with a universal term that quantifies it; hence they are *musawwara*. The root s-w-r means to surround or enclose something. This stands in contrast to *qaḍīyya muhmala* (indefinite propositions), as we see later. A more detailed discussion of quantifiers follows.

- 3) **Quantified Particular Propositions** (*juzʿīyya musawwara*): These are categorical statements that partially quantify the subject with a term. For example, “some people” or “one person” do not specify who the person is; if this were specified, it would be a singular proposition (*makhṣūṣa*).

- [18] Conjunctive [conditional propositions] are either **necessary** (*luzūmīyya*), as in our statement, “if the sun is out then it is daytime” or they are **contingent** (*ittifāqīyya*), as in our statement, “if humans are rational then donkeys bray.” The disjunctive [conditional proposition] is either a strong [disjunctive], as in our statement, “numbers are either even or odd,” and they (the disjuncts) are simultaneously **mutually exclusive and cannot be collectively false** (*mānī’at al-jam’ wa-mānī’at al-khuluww*).
- [19] Or they are only mutually exclusive, as in our statement, “this thing is either a rock or a tree.”
- [20] Or they can only be not collectively false, as in our statement, “Zayd is either in the water or he is not drowning.”
- [21] Disjunctive propositions can also be in three parts, as in our statement, “numbers are either greater [than], lesser [than], or equal [to].”

[١٨] وَالْمُتَّصِلَةُ: إِذَا لَزُمَتْ، كَقَوْلِنَا: «إِنْ كَانَتِ الشَّمْسُ طَالِعَةً فَاتَّهَارَ

مَوْجُودٌ». وَإِذَا اتَّفَقَتْ، كَقَوْلِنَا: «إِنْ كَانَ الْإِنْسَانُ نَاطِقًا فَالْجَمَاعُ نَاهِقٌ».

وَالْمُنْفَصِلَةُ: إِذَا حَقِيقَةٌ، كَقَوْلِنَا: «الْعَدَدُ إِذَا رُوحٌ وَإِذَا فَرْدٌ». وَهِيَ مَانِعَةٌ

الْجَنَعِ وَالْخُلُوعِ مَعًا.

[١٩] وَإِذَا مَانِعَةٌ الْجَنَعِ فَقَطْ، كَقَوْلِنَا: «هَذَا الشَّيْءُ إِذَا حَبَرَ أَوْ شَجَرَ».

[٢٠] وَإِذَا مَانِعَةُ الْخُلُوعِ فَقَطْ، كَقَوْلِنَا: «زَيْدٌ إِذَا أَنْ يَكُونَ فِي الْبَحْرِ وَإِذَا أَنْ لَا

يَغْرَقَ».

[٢١] وَقَدْ تَكُونُ الْمُتَنَفِّصَاتُ ذَاتَ أَجْزَاءٍ ثَلَاثَةً، كَقَوْلِنَا: «الْعَدَدُ إِذَا زَائِدٌ أَوْ

نَاقِصٌ أَوْ مُسَاوٍ».

In **contingent propositions**, the subject and predicate are attached to one another by concurrence or accident. This is known in Arabic texts of logic as *ittifāqīyya* which translates, literally, as “concurrence,” though the technical equivalent in English logic is “contingent.” This alludes to the idea that the truth of an antecedent does not necessitate the affirmation or denial of a consequent. The two may not be directly related or their concurrence may be a matter of coincidence rather than a linked cause.

Thus, in the example above, “if humans are rational then donkeys bray,” it is true that humans are rational and it is true that donkeys bray. But humans are rational independently of whether or not donkeys bray. Similarly, donkeys bray whether humans are rational or not. The two conjuncts are linked without a necessary connection between them even though they are both true. The consequent (i.e., donkeys bray) is also contingent, in that this may be absent or present without affecting the truth of the antecedent (i.e., humans are rational).

A **disjunctive conditional proposition** is a statement in which one, some, or none of the disjuncts of the statement can be true. Thus, it is “disjunctive” (*munfasila*) as opposed to a conjunctive proposition in which both conjuncts are either true or false. The disjunctive conditional proposition is further divided into what is known in English logic as a strong disjunctive proposition (*haqiqīyya*) and a weak disjunctive proposition. Strong propositions are both mutually exclusive (*mānī’at al-jam’*) and cannot be collectively false (*mānī’at al-khuluww*). Weak disjunctive propositions are mutually exclusive or disjuncts that cannot be collectively false but are not mutually exclusive.

The term mutually exclusive (*mānī’at al-jam’*) means that the two disjuncts in a disjunctive proposition cannot be true at the same time. The truth of one excludes the truth of the other. The term *mānī’at al-khuluww* means that the disjuncts cannot both be false—one has to be true. It is possible to have a weak disjunctive proposition in which the disjuncts cannot both be true and are therefore mutually exclusive, but they can both be false. In the example al-Abhari provides of such a

weak disjunctive, that is, “the thing is either a rock or a tree,” the rock and tree are mutually exclusive. One thing cannot be both a rock and a tree. However, the statement can be collectively false, in that the thing can be neither a rock nor a tree. Thus, this disjunctive proposition is not what is known as *mānī’at al-khuluww*.

Another example of a weak disjunct may be, “the traveler would like to keep driving or sleep.” The two disjuncts are mutually exclusive, as the traveler cannot sleep and drive at the same time. However, the disjuncts can be collectively false. It is possible that the traveler does not want to drive or sleep, but would like to stop for dinner instead.

A weak disjunct could be one that is not mutually exclusive but is not collectively false. Al-Abhari gives the example, “Zayd is in the water, or he is not drowning.” It is possible for both disjuncts to be true; Zayd can be in the water and also not be drowning. Therefore, the disjuncts are not mutually exclusive. However, both disjuncts cannot be false. The only way to drown is to be in the water. Therefore, saying that he is *not* “not drowning” means he is drowning and he cannot at the same time *not* be in the water.⁹ Thus, this disjunctive proposition is collectively false (*mānī’at al-khuluww*) but not mutually exclusive (*mānī’at al-jam’*).

Note that some translate *mānī’at al-khuluww* as “collectively exhaustive.” However, in this context, this is an error. The term “collectively exhaustive” requires that one option out of many must be absolutely true in the way that when rolling dice, the possibilities exhaust each other but one outcome must always be true. This case is not *mānī’at al-khuluww* since it is possible for more than one outcome to be true, unlike the example of dice, in which only one outcome can be true. It is possible for Zayd to be in the water and not drowning. The two disjuncts in the example al-Abhari provides do not collectively exhaust one another.

eating) in a conditional statement, he means that disjunctive conditional propositions are not limited to statements based on paired disjuncts. How the various disjuncts can be true or false is beyond the scope of the examples provided in the *Isagoge*.

Opposition

[22] Opposition is a difference between two categorical propositions in [terms of] affirmation or negation such that one of them must be true and the other must be false, as in our statements, "Zayd is a writer" and "Zayd is not a writer." This is not established, except after there is [a complete] equivalence of the subject, predicate, timing, place, relationship, capacity and action, universals and particulars, and conditions.

[23] The [contradictory] opposition of a universal affirmative proposition is a particular negative proposition. And the [contradictory] opposition of a universal negative proposition is a particular affirmative proposition, such as our statement: "all humans are animals" and "some humans are not animals." As well as [our statements] "no human is an animal" and "some humans are animals."

[24] Two quantified propositions (mashā'ir) do not establish a [contradictory] opposition between them except by differing in the [quantity of their] universals and particulars. This is because two universal propositions can both be false, such as our statements, "all humans are writers" and "no humans are writers." [Similarly], two particular propositions can both be true, as in our statements, "some humans are writers" and "some humans are not writers."

النقطة

[٢٢] هُوَ الْخِلَافُ الْمَوْجُودُ بِالْإِيجَابِ وَالنَّسْبِ بِعَيْتٍ يَتَلَوَّى لِذَلِكَ أَنْ تَكُونَ

إِخْتِلَافًا خِلَافَةً وَالْأَمْرُ كَالْبَيْتِ: كَقَوْلِكَ: «هَذِهِ كَاتِبَةٌ...» «هَذِهِ لَيْسَ

بَكَاتِبٍ»، وَلَا يَتَخَلَّقُ ذَلِكَ إِلَّا بِعَدِّ الْعَالَمِيَّاتِ فِي الذَّمِّ وَالْعُضْوِ، وَالْمَحَلِّ وَالْمَرْبُوعِ،

وَالزَّمَانِ، وَالْمَكَانِ، وَالْإِشَارَةِ وَالْقُوَّةِ وَالْفِعْلِ، وَالْأَكْلِ وَالْحَرَامِ وَالْمَرْبُوعِ.

[٢٣] وَيُعْبِشُ التَّوْحِيدَ الْكُلِّيَّ إِنَّمَا هُوَ الشَّيْءُ الْمَرْبُوعُ، وَيُعْبِشُ الشَّيْءَ

الْكُلِّيَّ إِنَّمَا هُوَ التَّوْحِيدُ الْمَرْبُوعُ، كَقَوْلِكَ: «كُلُّ إِنْسَانٍ عَيَّوَانٌ...» «بَعْضُ

الْإِنْسَانِ لَيْسَ بِعَيَّوَانٍ» وَ«لَا خَيْرَ مِنَ الْإِنْسَانِ بِعَيَّوَانٍ...» «بَعْضُ

الْإِنْسَانِ عَيَّوَانٌ».

[٢٤] فَالْمَشْهُورُ أَنَّ لَا يَتَخَلَّقُ الشَّيْءُ بَيْنَهُمَا إِلَّا بِعَدِّ الْخِلَافِيَّاتِ فِي الْكُلِّيِّ

وَالْمَرْبُوعِ، لِأَنَّ الْكُلِّيَّ لَمْ يَكُنْ يَتَلَوَّى كَقَوْلِكَ: «كُلُّ إِنْسَانٍ كَاتِبٌ» وَ«لَا

خَيْرَ مِنَ الْإِنْسَانِ بِكَاتِبٍ» وَ«بَعْضُ الْإِنْسَانِ لَمْ يَكُنْ يَتَلَوَّى» كَقَوْلِكَ: «بَعْضُ

الْإِنْسَانِ كَاتِبٌ...» «بَعْضُ الْإِنْسَانِ لَيْسَ بِكَاتِبٍ».

TRANSLATION

Opposition

[22] Opposition is a difference between two categorical propositions in [terms of] affirmation or negation such that one of them must be true and the other must be false, as in our statements, "Zayd is a writer" and "Zayd is not a writer." This is not established, except after there is [a complete] equivalence of the subject, predicate, timing, place, relationship, capacity and action, universals and particulars, and conditions.¹

¹ That is, it can only be established after complete equivalence is established.
² Right refers to the compound relationship of the subject such as, "brother-in-law" or "sister-in-law." Since these compound relationships are all ultimately subjects, the inclusion here may in fact be redundant; it serves to emphasize the author's point that everything must be an exact equivalent.

³ Capacity and action (quwwa wa-ʿamal) are philosophical concepts referring to something's potential to do something versus their actually doing it. Actuality is a capacity that is used out. For example, 'Wisha is breathing in actuality and not breathing in potentiality. This is not contradictory because, for example, having the potential to not breath (i.e., by holding one's breath) does not necessarily mean that one is not breathing in actuality.

⁴ The conditions in propositions must agree. For example, one proposition states, "If it is 70 degrees Wisha will be cold" and another proposition states, "If it is 75 degrees Wisha will be hot"; the two propositions do not contradict each other because the conditions differ (in one, the condition states that it is 70 degrees and in the other, it is 75 degrees).

EXPLANATORY NOTES

Propositional statements make statements that affirm or deny certain claims based on the relationship between the subject and the predicate of the proposition. This means that the affirmation or negation in one form of a categorical proposition will lead to a relationship with another proposition that conveys the opposite meaning. In logic, these related propositions that convey opposing meanings are known as **oppositions**. Each structure of such categorical proposition requires that its opposing proposition be formed in a particular correlating structure in order to retain its truth value.

Al-Abbari begins his discussion of opposition with the most simple form, which is known as a **singular proposition**. This refers to a specified object or individual as the subject of the categorical proposition. In such a statement, it is sufficient to simply contradict the singular proposition to convey its opposite meaning. Al-Abbari provides the proposition "Zayd is a writer." This is a singular proposition, in that the subject, "Zayd," refers to a specific individual. Specific individuals are also spoken of as universals or "wholes." That is, when we say Zayd is a writer, it is understood that all of Zayd is a writer and not one-quarter of Zayd or some part of Zayd.

Therefore, the contradictory oppositional proposition is simply formed with a negation. This process is also true for propositions that make statements about existence, such as "Al-sha exists." For this rule to be applicable the two singular statements (that is, the proposition and opposition) must be exactly the same in subject and predicate. They must not have any temporal qualifiers that change the nature of the subject or predicate in the oppositional proposition. Al-Abbari gives a list of temporal qualifiers such as time, location, relationship, etc. that can alter the equivalence of the subject and predicate in another categorical proposition; this, in turn, means that the contradiction is not an oppositional proposition in relation to the original.

Below are examples that further elucidate the temporal qualifiers that al-Abbari mentions in his text of the *ḥaṣṣa*.

Difference in subject: Zaynab is sitting + Umar is not sitting.

Difference in the predicate: Zaynab is standing + Zaynab is not eating.

Difference in timing: Zaynab was fasting yesterday + Zaynab is not fasting today.

Difference in location: Zaynab is not productive at home + Zaynab is productive at work.

Difference in relationship (Aḥbāb): Zaynab is Ahmad's aunt + Zaynab is not Wisha's aunt.

Difference in potentiality and actuality: Zaynab is, in potentiality, a good writer + Zaynab is not, in actuality, a good writer.

Difference in universals and particulars: Zaynab is white [her skin tone as a whole] + Zaynab is dark [in part, when referring to her eyes].

Difference in conditions: Zaynab likes to work [when she is at her job] + Zaynab does not like to work [when she is on vacation].

Note that the rules for deriving oppositional statements rest on what is known as the **principle of non-contradiction**. This states that it is impossible for two contradictory statements to both be true and it is impossible for them to both be false. However, in order for this principle of non-contradiction to be applicable to two statements, they must be exactly the same in every way, including all of the temporal qualifiers al-Abbari lists in the examples above. Otherwise, because a qualifier may alter the subject or predicate of the original categorical proposition, two statements that may appear contradictory may not be truly contradictory.

If we return to al-Abbari's example, "Zayd is a writer," the only way to contradict this type of singular statement is by saying the exact same thing with the exact same qualities (i.e., time, place, etc.) and by stating contradictory things about them (i.e., in the case above,

"Zayd is not a writer"). For example, the statement "Zayd is writing in the morning" and "Zayd is not writing in the afternoon," is not a contradictory opposition because the temporal quality differs. Similarly, a true contradiction involves referring to the exact same subject and the same thing attributed to the subject, then affirming it in one proposition and negating it in another. Commentaries on the *ḥaṣṣa* by some later scholars have simplified the above by stating that the **entirety** of the subject and predicate must be exactly the same.

Quantities of propositions involve the question, "how much?" In the context of non-singular (that is, universal and particular) categorical propositions, the quantity of a proposition specifies the extent of the subject, for example, all, some, every. Thus, every subject of a proposition is either singular, universal, or particular based on what is known as its quantity. Universal propositions are universal if the subject is referred to its entirety rather than its parts. Words such as, "every" and "all" and negative terms such as "no" and "none" are universals. Particulars refer to the restricted extent of a subject. Quantifiers such "some" and "many" are examples of terms that precede a subject and make the proposition particular, based on the particularity of its subject.

Universal and Particular Quantifiers

Below are some of the most common examples of quantifiers used to denote universal and particular statements.

Universal Quantifiers

All—All humans are rational
Any—Any human is rational
None—None of the humans are rational
No one—No one is rational
No—No human is rational
Never—Humans are never rational
She/who—She who is human is rational
One who—One who is human is rational
Whoever—Whoever is human is rational
Whoever—Whoever is human is rational

Particular Quantifiers

Some—Some humans are rational
Often—Often humans are rational

Several—Several humans are rational
Commonly—Commonly, humans are rational
Most—Most humans are rational
Usually—Usually humans are rational
Sometimes—Sometimes humans are rational
Frequently—Frequently humans are rational

Universal and Particular Quantifiers

Below are some of the most common examples of quantifiers used to denote universal and particular statements.

Universal Quantifiers

All—All humans are rational
Any—Any human is rational
None—None of the humans are rational
No one—No one is rational
No—No human is rational
Never—Humans are never rational
She/who—She who is human is rational
One who—One who is human is rational
Whoever—Whoever is human is rational
Whoever—Whoever is human is rational

Particular Quantifiers

Some—Some humans are rational
Often—Often humans are rational

EXPLANATORY NOTES

Propositions are said to have both qualities and quantities. Qualities either affirm or deny relationships between subjects and predicates in a proposition. Thus, when we say "Al-sha is a scholar," the quality of this proposition is an affirmation that binds the subject and the predicate. Similarly, if we say "Al-sha is not a scholar" we have established a quality of denial in this proposition in which the subject and the predicate have a relationship of difference.

Several—Several humans are rational
Commonly—Commonly, humans are rational
Most—Most humans are rational
Usually—Usually humans are rational
Sometimes—Sometimes humans are rational
Frequently—Frequently humans are rational

Universal and Particular Quantifiers

Below are some of the most common examples of quantifiers used to denote universal and particular statements.

Universal Quantifiers

All—All humans are rational
Any—Any human is rational
None—None of the humans are rational
No one—No one is rational
No—No human is rational
Never—Humans are never rational
She/who—She who is human is rational
One who—One who is human is rational
Whoever—Whoever is human is rational
Whoever—Whoever is human is rational

Particular Quantifiers

Some—Some humans are rational
Often—Often humans are rational

EXPLANATORY NOTES

Propositions are said to have both qualities and quantities. Qualities either affirm or deny relationships between subjects and predicates in a proposition. Thus, when we say "Al-sha is a scholar," the quality of this proposition is an affirmation that binds the subject and the predicate. Similarly, if we say "Al-sha is not a scholar" we have established a quality of denial in this proposition in which the subject and the predicate have a relationship of difference.

Several—Several humans are rational
Commonly—Commonly, humans are rational
Most—Most humans are rational
Usually—Usually humans are rational
Sometimes—Sometimes humans are rational
Frequently—Frequently humans are rational

Universal and Particular Quantifiers

Below are some of the most common examples of quantifiers used to denote universal and particular statements.

Universal Quantifiers

All—All humans are rational
Any—Any human is rational
None—None of the humans are rational
No one—No one is rational
No—No human is rational
Never—Humans are never rational
She/who—She who is human is rational
One who—One who is human is rational
Whoever—Whoever is human is rational
Whoever—Whoever is human is rational

Particular Quantifiers

Some—Some humans are rational
Often—Often humans are rational

EXPLANATORY NOTES

Propositions are said to have both qualities and quantities. Qualities either affirm or deny relationships between subjects and predicates in a proposition. Thus, when we say "Al-sha is a scholar," the quality of this proposition is an affirmation that binds the subject and the predicate. Similarly, if we say "Al-sha is not a scholar" we have established a quality of denial in this proposition in which the subject and the predicate have a relationship of difference.

Several—Several humans are rational
Commonly—Commonly, humans are rational
Most—Most humans are rational
Usually—Usually humans are rational
Sometimes—Sometimes humans are rational
Frequently—Frequently humans are rational

Universal and Particular Quantifiers

Below are some of the most common examples of quantifiers used to denote universal and particular statements.

Universal Quantifiers

All—All humans are rational
Any—Any human is rational
None—None of the humans are rational
No one—No one is rational
No—No human is rational
Never—Humans are never rational
She/who—She who is human is rational
One who—One who is human is rational
Whoever—Whoever is human is rational
Whoever—Whoever is human is rational

Particular Quantifiers

Some—Some humans are rational
Often—Often humans are rational

EXPLANATORY NOTES

Propositions are said to have both qualities and quantities. Qualities either affirm or deny relationships between subjects and predicates in a proposition. Thus, when we say "Al-sha is a scholar," the quality of this proposition is an affirmation that binds the subject and the predicate. Similarly, if we say "Al-sha is not a scholar" we have established a quality of denial in this proposition in which the subject and the predicate have a relationship of difference.

Several—Several humans are rational
Commonly—Commonly, humans are rational
Most—Most humans are rational
Usually—Usually humans are rational
Sometimes—Sometimes humans are rational
Frequently—Frequently humans are rational

Universal and Particular Quantifiers

Below are some of the most common examples of quantifiers used to denote universal and particular statements.

Universal Quantifiers

All—All humans are rational
Any—Any human is rational
None—None of the humans are rational
No one—No one is rational
No—No human is rational
Never—Humans are never rational
She/who—She who is human is rational
One who—One who is human is rational
Whoever—Whoever is human is rational
Whoever—Whoever is human is rational

Particular Quantifiers

Some—Some humans are rational
Often—Often humans are rational

EXPLANATORY NOTES

Propositions are said to have both qualities and quantities. Qualities either affirm or deny relationships between subjects and predicates in a proposition. Thus, when we say "Al-sha is a scholar," the quality of this proposition is an affirmation that binds the subject and the predicate. Similarly, if we say "Al-sha is not a scholar" we have established a quality of denial in this proposition in which the subject and the predicate have a relationship of difference.

Several—Several humans are rational
Commonly—Commonly, humans are rational
Most—Most humans are rational
Usually—Usually humans are rational
Sometimes—Sometimes humans are rational
Frequently—Frequently humans are rational

Universal and Particular Quantifiers

Below are some of the most common examples of quantifiers used to denote universal and particular statements.

Universal Quantifiers

All—All humans are rational
Any—Any human is rational
None—None of the humans are rational
No one—No one is rational
No—No human is rational
Never—Humans are never rational
She/who—She who is human is rational
One who—One who is human is rational
Whoever—Whoever is human is rational
Whoever—Whoever is human is rational

Particular Quantifiers

Some—Some humans are rational
Often—Often humans are rational

EXPLANATORY NOTES

Propositions are said to have both qualities and quantities. Qualities either affirm or deny relationships between subjects and predicates in a proposition. Thus, when we say "Al-sha is a scholar," the quality of this proposition is an affirmation that binds the subject and the predicate. Similarly, if we say "Al-sha is not a scholar" we have established a quality of denial in this proposition in which the subject and the predicate have a relationship of difference.

Several—Several humans are rational
Commonly—Commonly, humans are rational
Most—Most humans are rational
Usually—Usually humans are rational
Sometimes—Sometimes humans are rational
Frequently—Frequently humans are rational

Universal and Particular Quantifiers

Below are some of the most common examples of quantifiers used to denote universal and particular statements.

Universal Quantifiers

All—All humans are rational
Any—Any human is rational
None—None of the humans are rational
No one—No one is rational
No—No human is rational
Never—Humans are never rational
She/who—She who is human is rational
One who—One who is human is rational
Whoever—Whoever is human is rational
Whoever—Whoever is human is rational

Particular Quantifiers

Some—Some humans are rational
Often—Often humans are rational

EXPLANATORY NOTES

Propositions are said to have both qualities and quantities. Qualities either affirm or deny relationships between subjects and predicates in a proposition. Thus, when we say "Al-sha is a scholar," the quality of this proposition is an affirmation that binds the subject and the predicate. Similarly, if we say "Al-sha is not a scholar" we have established a quality of denial in this proposition in which the subject and the predicate have a relationship of difference.

Conversion

- [25] Conversion (*'aks al-mustawī*) [involves] the subject term being made into the predicate term and the predicate term being made into the subject term while maintaining the affirmative or negative [quality of the proposition], and [maintaining its] truth or falsehood. A universal affirmative proposition does not convert to a universal proposition. Although our statement, "every human is an animal" is true, the converse that "every animal is a human" is not true. Therefore, it [i.e., the statement "every animal is a human"] must convert to a particular proposition. This is [true] because if we say, "every human is an animal," it would be accurate [to say], "some animals are humans." [This is true because] we find elements of specific traits in [both] humans and animals. Thus, it is [true] that "some animals are humans."

- [26] Based on this reasoning, a particular affirmative proposition is also converted as a particular proposition. A universal negative proposition is converted as a universal proposition. This is self-evident, because if it is true that "no stone is a human," then it is [also] true that "no human is a stone." A particular negative proposition has no necessary conversion [pattern] because our statement, "some animals are not humans," is true, whereas its conversion is not true.

الْعَكْسُ

[٢٥] هُوَ أَنْ يُصَيِّرَ الْمَوْضُوعُ عَمُومًا وَالْمَعْمُولُ مَوْضُوعًا نَحْ بَقَاءِ الْإِيجَابِ

وَالسَّلْبِ بِخَالِهِ وَالتَّصْدِيقِ وَالتَّكْذِيبِ بِخَالِهِ. الْمَوْجِبَةُ الْكُلِّيَّةُ لَا تَتَعَكِّشُ

كُلِّيَّةً؛ إِذْ يَصْدُقُ قَوْلُنَا: «كُلُّ إِنْسَانٍ حَيَوَانٌ»، وَلَمْ يَصْدُقْ «كُلُّ حَيَوَانٍ

إِنْسَانٌ»، بَلْ تَتَعَكِّشُ جُزْئِيَّةً؛ لِذَا إِذَا أَقَلْنَا: «كُلُّ إِنْسَانٍ حَيَوَانٌ»

يَصْدُقُ: «بَعْضُ الْحَيَوَانِ إِنْسَانٌ»، فَإِنَّا نَجِدُ شَيْئًا مُعَيَّنًا مَوْضُوعًا بِإِلْإِنْسَانِ

وَالْحَيَوَانِ، فَيَكُونُ «بَعْضُ الْحَيَوَانِ إِنْسَانًا».

[٢٦] وَالْمَوْجِبَةُ الْجُزْئِيَّةُ أَيْضًا تَتَعَكِّشُ جُزْئِيَّةً بِهَذِهِ الْحُجَّةِ. وَالسَّلْبِيَّةُ الْكُلِّيَّةُ

تَتَعَكِّشُ كُلِّيَّةً، وَذَلِكَ نَبَيُّ فِي نَفْسِهِ، فَإِنَّهُ إِذَا صَدَقَ: «لَا شَيْءٌ مِنَ الْحَجَرِ

بِإِنْسَانٍ» صَدَقَ «لَا شَيْءٌ مِنَ الْإِنْسَانِ بِحَجَرٍ». وَالسَّلْبِيَّةُ الْجُزْئِيَّةُ لَا عَكْسَ

لَهَا لَزُومًا؛ لِأَنَّهُ يَصْدُقُ قَوْلُنَا: «بَعْضُ الْحَيَوَانِ لَيْسَ بِإِنْسَانٍ» وَلَا يَصْدُقُ

عَكْسُهُ.

TRANSLATION

Conversion

- [25] Conversion (*'aks al-mustawī*) [involves] the subject term being made into the predicate term and the predicate term being made into the subject term while maintaining the affirmative or negative [quality of the proposition], and [maintaining its] truth or falsehood. A universal affirmative proposition does not convert to a universal proposition. Although our statement, "every human is an animal" is true, the converse that "every animal is a human" is not true. Therefore, it [i.e., the statement "every animal is a human"] must convert to a particular proposition. This is [true] because if we say, "every human is an animal," it would be accurate [to say], "some animals are humans." [This is true because] we find elements of specific traits in [both] humans and animals. Thus, it is [true] that "some animals are humans."

- [26] Based on this reasoning, a particular affirmative proposition is also converted as a particular proposition. A universal negative proposition is converted as a universal proposition. This is self-evident, because if it is true that, "no stone is a human," then it is [also] true that, "no human is a stone." A particular negative proposition has no necessary conversion [pattern] because our statement, "some animals are not humans," is true, whereas its conversion is not true.

EXPLANATORY NOTES

Conversion (*'aks al-mustawī*) is a process in which the subject and the predicate are reversed while maintaining the the propositions' affirmative or negative quality and its truth value. That is, rather than stating the opposite of a proposition (the way we did in earlier oppositional statements), in a conversion, we state the same thing in a different way. For a conversion to do this, there are rules to follow based on the quantity and quality of each proposition. The new proposition that results after a subject and predicate are switched is known as the converse. According to the rules for proper conversion, there are two types of conversion, a simple conversion and conversion by limitation.

Simple Conversion and Conversion by Limitation

Simple conversion is a process by which the subject and the predicate are switched without making any other changes to its quality or quantity. This is valid only for universal negative propositions (E propositions) and particular affirmative propositions (I propositions). When al-Abhari writes, "A particular affirmative proposition is also converted as a particular proposition based on this reasoning," he is referring to I propositions. This means that the I proposition, "some S is P," can be converted by simple conversion to, "some P is S."

Al-Abhari also gives an example of E propositions in the section on conversion when he writes: "A universal negative proposition is converted as a universal proposition. And this is clearly self-evident, because if it is true that, 'no stone is a human,' then it is [also] true that, 'no human is a stone.'"

This type of conversion process is known as a "simple conversion" because, as we see in the example, the subject and predicate *simply* switch, while maintaining the truth value of the statement.

Conversion by limitation entails two steps. The first step involves switching the subject and the predicate. The second step involves adjusting the quantity. This process is used to convert universal

affirmative (A) propositions. This is indicated in al-Abhari's statement, "a universal affirmative proposition does not convert to a universal proposition." The process for conversion by limitation for A propositions involves adjusting the quantity from universal to particular. Thus, if it is said 'every S is P,' the converse would be 'some P is S.'"

The example al-Abhari provides is the universal A proposition, "every human is an animal." The reversal of the subject and predicate without adjusting its quality would be invalid in terms of its truth value because, as al-Abhari states, "we find elements of specific traits in [both] humans and animals." He means that the category of animal is broader than the category of human. This relates to the concept of **distribution** in logic. When a term applies to the entirety of another term, we say it is distributed. Universal propositions always distribute the predicate to the entirety of the subject, but this is not the case when they are reversed. That is, "all animals" distributes itself to "all humans," meaning that there is no human that is not an animal. However, the category of animal is broader than the category of human because it includes other non-human animals. This means a subject of a broader category cannot be used universally as a predicate of a narrower category because the predicate in this case would **not be distributed** to the subject. Thus, universal propositions must be made into particular propositions as a part of their conversion process. This is what al-Abhari means when he says:

"Every human is an animal" is true, the converse that "every animal is a human" is not true. Therefore, it must convert as a particular proposition. This is because if we said, "every human is an animal," it would be accurate [to say], "some animals are humans."

O propositions or particular negative propositions do not have any set rule by which they can be converted. The simple conversion rules and the conversion by limitation rules only apply to A, I, and E propositions. This is what al-Abhari means in his statement: "A particular negative proposition has no necessary conversion [pattern]. This is

because our statement, 'some animals are not humans,' is true, whereas its conversion is not true."

Obversion (*'aks al-naqīd*)

Finally, note that obversion is another form by which we can make the same statement in terms of truth value while adjusting the quality of the proposition. An obversion involves denying the contradictory opposition of a proposition to affirm the same truth of a proposition. An obversion is based on the premise that if a proposition is true, then a denial of its contradiction will retain the same truth. Obversion is known in Arabic as *'aks al-naqid*, as opposed to conversion, which is known as *'aks al-mustawī*. Although al-Abhari does not discuss obversion, later commentaries on the *Isagoge* and other logic texts mention it. We also find these concepts in the study of debate and disputation (*'ilm al-baḥth wa-l-munāẓara*). The following are examples of obversion.

Zaynab is a distinguished writer.

Obversion: *Zaynab is not an undistinguished writer.*

'Umar always runs fast

Obversion: *'Umar does not ever not run fast.*

The process of proper obversion entails two steps. *First*, the quality of the proposition must change. *Second*, the predicate must be negated.

Step One: "Humans are rational," changes to "humans are irrational."

Step Two: "Humans are irrational" changes to "humans are not irrational."

Thus, the obversion of the statement, "humans are rational," is "humans are not irrational."

Syllogism

[27] [A syllogism] is an assertion composed of [other] assertions, which if accepted as true, necessitates another assertion. It can be a **correlative [syllogism]** (*iqṭirāwī*), such as our statement: "each body is formed," and "each thing which is formed is temporal" therefore "each body is temporal." Alternatively, it can be a **selective [syllogism]** (*istithnāʿī*), such as our statement, "if the sun is out, then it is daytime." However, "it is not daytime," therefore, "the sun is not out."

[28] What is repeated between the two premises of the syllogism is referred to as the "**middle term**" (*ḥadd awṣaf*). The subject of the conclusion is referred to as the **minor term** (*ḥadd aṣḡar*) and its predicate is the **major term** (*ḥadd akbar*). The premise that contains the minor term is referred to as the **minor [premise]** (*ṣaḡhrā*) and the one that contains the major term is known as the **major [premise]** (*akbar*). The structural composition of the major and minor premises [of the syllogism] is called a figure (*ṣakf*).

[29] There are four figures [of syllogisms]. If the middle term is the predicate in the minor premise and the subject in the major premise, then it is the **first figure**. If it is the inversion [of this] then it is the **fourth figure**. If [the middle term] is the subject in both [premises] then it is the **third figure**. If [the middle term] is the predicate in both [premises], then it is the **second figure**. These are the four figures outlined in logic.

المقياس

[٢٧] هُوَ قَوْلٌ مُؤَلَّفٌ بِلِ قَوْلَيْهِ مَعَى سُلْطَةٍ لَيْمَ عَظَمًا لِذِيهَا قَوْلٌ آخَرُ. وَهُوَ

إِذَا اقْتَرَيْنِ، فَقَوْلُهُ: «كُلُّ شَيْءٍ مُؤَلَّفٌ» وَ «كُلُّ مُؤَلَّفٍ مُخْتَلَفٌ» «فَكُلُّ شَيْءٍ مُخْتَلَفٌ» فَإِذَا اسْتَيْسَّاتِي، كَقَوْلِكَ: «إِنْ كَانَتْ الشَّمْسُ ظَالِمَةً

فَالْهَازُ مُوجَدٌ...» «لَكِنْ الْهَازُ لَيْسَ بِمُوجَدٍ...» «فَالشَّمْسُ لَيْسَتْ بِظَالِمَةٍ».

وَالْمُتَكَرِّرُ بَيْنَ مُقَدِّمَتَيْ الْبَيَانِ يَتَشَى عَدَا لَوْسَطَ، وَنُحْشُوعُ النُّظُولِ

يَتَشَى عَدَا لَصَغَرٍ، وَتَقْتَدِرُ لَهُ يَتَشَى عَدَا لَكَبَرٍ، وَالْمُقَدِّمَةُ الَّتِي فِيهَا

الرَّصَدُ لَتَشَى صُغَرٍ، وَالَّتِي فِيهَا الرَّكْبُ لَتَشَى كَبَرٍ، وَهَيْئَةُ التَّالِيَةِ

مِنَ الشَّعَرِ وَالْكَبَرِ تَشَى خُفَرٍ.

وَالْمُتَكَرِّرُ أَرْبَعَةٌ: إِنْ كَانَ الْوَسَطُ إِنْ كَانَ خُفَرًا فِي الشَّعَرِ نُحْشُوعًا

فِي الْكَبَرِ فَهُوَ الشَّكْلُ الرَّكْبُ، وَإِنْ كَانَ بِالْعَكْسِ فَهُوَ الرِّبْعُ، وَإِنْ كَانَ

نُحْشُوعًا بِيَهْمَا فَهُوَ التَّالِيَةُ، وَإِنْ كَانَ خُفَرًا فِيْهِمَا فَهُوَ التَّالِيَةُ. فَهَذِهِ هِيَ

الرَّكْبَةُ الْإِتْمَانُ الْمَذْكُورَةُ فِي النُّظُولِ.

TRANSLATION

The Syllogism

[27] [A syllogism] is an assertion" composed of [other] assertions, which if accepted as true, necessitates another assertion. It can be a **correlative [syllogism]** (*iqṭirāwī*), such as our statement: "each body is formed," and "each thing which is formed is temporal" therefore "each body is temporal." Alternatively, it can be a **selective [syllogism]** (*istithnāʿī*), such as our statement, "if the sun is out, then it is daytime." However, "it is not daytime," therefore, "the sun is not out."

EXPLANATORY NOTES

Inductive and Deductive Reasoning

When we form inferences or conclusions in our minds about matters that we do not already have information about, then we must use one of two methods of reasoning. The first method of reasoning is **inductive reasoning** and the second is **deductive reasoning**. In both cases, we use pre-established concepts, that is, propositions that are taken to be truths to establish a relationship between these assertions and derive another assertion known as the conclusion. In Arabic logic, this relationship between assertions that establishes a conclusion by necessity (i.e., *ḥukm al-ḥukm*) is known as *ḥukm*.

Inductive reasoning relies on the observation of consistent recurrences of certain matters from which we can derive a conclusion based

14 Other editions add the phrase, *maḥḥiṣṣan an-naḥḥiṣṣat* ("either articulated or conceptualized").

on the assumption that the recurrence will continue. This type of conclusion may be derived from scientific experimentation or the way we form common beliefs about how the world operates. Examples of inductive reasoning include the following.

Alexander the Great was mortal.
Muhammad Ali was mortal.
Malcolm X was mortal.
Everyone who lived in the eighteenth century was mortal.
Therefore, I must also be mortal.

This conclusion is reached through inductive reasoning, after seeing a prevalent pattern (in this case death). It can be assumed to apply to other similar instances (in this case all humans in the eighteenth century). Inductive reasoning is foundational to deriving conclusions from scientific laboratory work, in which scientists conduct extensive experiments with controls, to look for consistent patterns and gather knowledge about how microorganisms or chemicals operate.

The second way to derive conclusions is through the use of deductive reasoning. **Deductive reasoning involves combining a number of pre-established concepts (*ḥukm al-ḥukm*) that have a common link in order to derive new conclusions based on the evidence of the connections between these concepts.** The study of logic focuses on the study of deductive reasoning.

The Syllogism (*qiyās*) and Its Forms: Correlative (*iqṭirāwī*) and Selective (*istithnāʿī*) Syllogisms

The word *qiyās* ("syllogism") comes from a root word that means "to measure," "to judge," "to correlate," and/or "to draw comparisons." This stands in contrast to syllogisms of correlation, in which the entirety of the conclusion does not appear in the premises, but rather results from the implied connection between the premises. In the case of syllogisms of correlation, this "appearance" of a conclusion through implication is said to be an appearance in potentiality (*bi-l-quwwa*).

In a selective syllogism, the major premise (which is the first premise in the syllogism) also contains a conditional "if-then" statement. The example al-Abhari provides of conditional syllogisms is, "if the

statement results in a new statement or conclusion based on this connection.

Al-Abhari notes that syllogisms have two forms, syllogisms of correlation (*iqṭirāwī*) and selective syllogisms (*istithnāʿī*). The most common example used to demonstrate the combined syllogism is S=M, M=P, therefore S=P. In the correlative syllogism the key identifying factor is the importance of the premises; the entirety of the conclusion (S=P) cannot be reached without the premises leading up to it. Thus, two propositions are combined to result in the conclusion, since only parts of the conclusion are in each of the premises.

This combination of two propositions in a syllogism occurs by way of a connecting term that recurs in both propositions, which in turn connects the two premises by way of "mediation." This connection between the two propositions is called "correlation" (*muqārrana*): It necessitates a new statement in the form of a conclusion. Thus, syllogisms that are derived from correlating propositions that contain a mediating phrase or term that connects them are known in Arabic logic as *qiyās al-iqṭirāwī* (syllogisms of correlation). The following sections of the *Isagoge* detail about the ways in which these types of syllogisms are established.

A selective syllogism (*qiyās al-istithnāʿī*) is a syllogism in which the conclusion or the opposite of the conclusion appears in one of the two propositions leading to the conclusion. Since it appears in its full form in one of the propositions, a selective syllogism is said to appear in actuality (*bi-l-ḥaṣṣa*). This stands in contrast to syllogisms of correlation, in which the entirety of the conclusion does not appear in the premises, but rather results from the implied connection between the premises. In the case of syllogisms of correlation, this "appearance" of a conclusion through implication is said to be an appearance in potentiality (*bi-l-quwwa*).

The two premises that lead to the conclusion are connected by what is known as a middle term. The middle term creates the correlation between the two propositions and makes them function as premises (by creating new information in the form of a third proposition, known as the conclusion). This connector or link between the two premises

sun has risen, then it is daylight." The conditional premise that contains the "if-statement" is known as *muqaddima shartiyya*. The minor premise (which is the second premise in the syllogism, that is, the "then-statement") is a categorical proposition (*qadḥya ḥamliyya*) in which the predicate or subject of the first premise is affirmed or denied. In this case, we might say that one of the conditions is "selected" in the selective syllogisms. If the second premise affirms the first premise, it is known as an affirmative premise (*waḥḍā*). If the minor premise negates the first premise it is known as a negational premise (*naḥḍā*).

The following is an example of an affirmative selective syllogism.

If the sun has risen, it is daytime. [Premise 1]

The sun has risen. [Premise 2]

Therefore, it is daytime. [Consequent]

The following is an example of a negative selective syllogism.

If the sun has risen, it is daytime. [Premise 1]

It is not daytime. [Premise 2]

Therefore, the sun has not risen. [Consequent]

Note that in both cases the consequent or its contradiction is expressed explicitly (*bi-l-ḥaṣṣa*) in the first premise ("the sun has risen") of the selective syllogism. Furthermore, in a conditional syllogism: "If A, then B" the conditional element "if A" is known as the antecedent (*muqaddima*). The result "then B" is known as the consequent (*ḥukm*).

There are two additional rules related to conditional syllogisms:

1. *An affirmation of the antecedent must result in an affirmation of the consequent. But an affirmation of the consequent does not necessitate an affirmation of the antecedent.*

For example, in the conditional proposition, "if Zaynab is a human [being], she is a living being," affirming Zaynab's humanity necessitates affirming her status as a living being. In fact, an affirmation that she is a living being does not

necessarily mean she is a human being. She could be a cat, a plant, or a goat.

2. *A negation of the consequent necessitates a negation of the antecedent, but a negation of the antecedent does not necessitate a negation of the consequent.* In the example, "if Zaynab is a human [being], she is a living being," if we say Zaynab is not a living being, we would have to conclude that she is not a human [being], but if we say she is not a human being, she could still be another type of living being.

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

Commentary and Explanation | 89

- [30] The fourth figure is exceedingly distant from what is natural. One with a sound mind and a steady disposition does not need to revert the second [figure] into the first [figure]. The second [figure] is derived when there is a contradiction between the two premises [by way of] either affirmation or negation. The first figure is the one that has been considered the standard for [deductive] knowledge. We presented it here to form a blueprint and derive what is requested.

[There are] four optimal moods

- [31] **First:** As in our statement, “each body is formed” and “each thing that has been formed is temporal,” therefore, “each body is temporal.”
- [32] **Second:** As in our statement, “each body is formed,” and “nothing that is formed is eternal,” therefore “no body is eternal.”
- [33] **Third:** As in our statement, “some bodies are formed,” and “everything that is formed is temporal,” therefore “some bodies are temporal.”
- [34] **Fourth:** As in our statement, “some bodies are formed,” and “nothing that is formed is eternal,” therefore, “some bodies are not eternal.”

[٣٠] وَالشَّكْلُ الرَّابِعُ مِنْهَا يَبِيدُ عَنِ الطَّنْعِ جَدًّا. وَالَّذِي لَهُ عَقْلٌ سَلِيمٌ وَ طَنِعٌ

مُسْتَقِيمٌ لَا يَحْتَاجُ إِلَى رَدِّ الثَّانِي إِلَى الْأَوَّلِ. وَلِنَّمَا يُنْتِجَ الثَّانِي عِنْدَ اخْتِلَافِ

مَقْدَمَيْهِ بِالْإِجَابِ وَالسَّلْبِ. وَالشَّكْلُ الْأَوَّلُ هُوَ الَّذِي جُعِلَ مَعْيَارًا

لِلْعُلُومِ، فَتَوَرَّدَ هَهُنَا لِجَعْلِ دُسْتُورًا وَيُسْتَنْتَجَ مِنْهُ الْمَطْلُوبُ

وَصُرُوبُهُ الْمُنْتَبِجَةُ أَرْبَعَةٌ:

[٣١] الْأَوَّلُ: كَقَوْلِنَا: «كُلُّ جِسْمٍ مُؤَلَّفٌ» وَ «كُلُّ مُؤَلَّفٍ مُخَدَّثٌ» فَكُلُّ

جِسْمٍ مُخَدَّثٌ.

[٣٢] الثَّانِي: كَقَوْلِنَا: «كُلُّ جِسْمٍ مُؤَلَّفٌ» وَ «لَا شَيْءَ مِنَ الْمُؤَلَّفِ بِقَدِيمٍ» فَلَا

شَيْءَ مِنَ الْجِسْمِ بِقَدِيمٍ.

[٣٣] الثَّالِثُ: كَقَوْلِنَا: «بَعْضُ الْجِسْمِ مُؤَلَّفٌ» وَ «كُلُّ مُؤَلَّفٍ حَادِثٌ»

فَبَعْضُ الْجِسْمِ حَادِثٌ.

[٣٤] الرَّابِعُ: كَقَوْلِنَا: «بَعْضُ الْجِسْمِ مُؤَلَّفٌ» وَ «لَا شَيْءَ مِنَ الْمُؤَلَّفِ بِقَدِيمٍ»

فَبَعْضُ الْجِسْمِ لَيْسَ بِقَدِيمٍ.

TRANSLATION

- [30] The fourth figure is exceedingly distant from what is natural. One with a sound mind and a steady disposition does not need to revert the second [figure] into the first [figure]. The second [figure] is derived when there is a contradiction between the two premises [by way of] either affirmation or negation. The first figure is the one that has been considered the standard for [deductive] knowledge. We presented it here to form a blueprint and derive what is requested.

EXPLANATORY NOTES

Validity vs. Truth of Syllogisms

As mentioned, a correlative syllogism is formed when two premises have a common connection in the form of their middle term. When this middle term forms a connection between two premises, then the conclusion is inferred by necessity. If the premises are assumed to be true and the connecting middle term has a valid connection between the two premises, then the conclusion is both valid and true. However, if the premises are not true but the syllogistic process by which the two premises are connected through the middle term is sound, then the syllogism is valid but the truth of the conclusion may or may not be true. In such a case, it is said that the truth of the conclusion is undetermined. On the other hand, if both the premises are true and the conclusion is false, then there must be a fallacy in the syllogistic reasoning that makes the syllogism itself invalid.

The following is an example of a syllogism that is valid but untrue:

Unicorns always have a single horn

Adam is a unicorn

Therefore, Adam has a single horn

The connection between the two premises above is valid. Therefore, the syllogism is valid. But the conclusion and all of the premises are clearly false, since unicorns do not exist. Therefore, it is important to distinguish between a valid conclusion based on valid syllogistic reasoning and a true conclusion. More details about what makes syllogisms valid follow; for now, I examine the kinds of valid syllogisms al-Abhari describes in this section.

The following is an example of an invalid syllogism with a true conclusion.

All humans are rational beings

Adam is a human

Therefore, all humans are mortal

The premises above are all true and the conclusion is also a true statement. However, the syllogism is invalid because the connection between the premises and the conclusion is insufficient. A valid syllogism can only have three terms: A major, minor, and middle term. The conclusion has a fourth term, “mortal,” which makes the syllogism invalid. A syllogism that is invalid because of an extra term is known as a **fourth term fallacy**. Thus, we can see that premises and conclusions in a syllogism can be true statements but the validity of the syllogistic process itself is a separate matter.

Some Forms of Valid Syllogisms Presented by al-Abhari

After presenting the four figures (*shakl*) of a syllogism and understanding the placement of the middle term, al-Abhari explains that he included the fourth figure for the sake of thoroughness, but in practice the fourth figure is rarely, if ever, used to make an argument. He states that the fourth figure mentioned, in which the middle term is the subject in the minor premise and a predicate in the major premise, is

a convoluted form of making an argument and is not commonly used because of its lack of clarity. Al-Abhari also explains that the second figure is not as clear as the first figure but it is still understandable to someone with a strong rational ability.

He also explains that figure 2 has two conditions that must be fulfilled in order to reach a valid conclusion. First, if one of the premises is affirmative, the other must be negative. Second, one of the two premises must be a universal proposition. The conclusion of the second form is always a particular negative proposition or a universal negative proposition. That is, the conclusion is always a negative statement.

Figures 3 and 4 are always a particular affirmative or a particular negative conclusion. That is, the conclusion of figures 3 and 4 must always be particular. Figure 4 must fulfill a number of other conditions in order to result in a valid conclusion. If the major premise is universal, one of the two premises must be affirmative and the other premise negative. If the minor premise is universal, both the premises must be affirmative.

As al-Abhari states, the most ideal and clear form of the syllogism is that of figure 1. Logicians refer to figure 1 as the “perfect syllogism.” This is because in making a strong argument, one aims to use figure 1 syllogisms, since the other figures do not always yield clear results. This is why when attempting to make a clear argument, there is an effort to transform figures 2–4 into the first figure when possible. For instance, one can transform figure 2 into figure 1, by changing the major premise into its converse (*ʿaks al-mustawīʿ*) to render it into a figure 1 syllogism.

[25] **Correlative syllogisms** (*qiyas*) are composed of two categorical propositions, as exemplified:

[26] Or they are composed of two conjunctive [propositions], as in our statements, 'If the sun is not then it is daytime' and 'Every time it is daytime, the earth is illuminated'; therefore, 'If the sun is not, the earth is illuminated.'

[27] Alternatively a [correlative syllogism] can be composed of two disjunctive [propositions], as in our statements, 'Every [whole] member is either even or odd' and 'Every even number is either the pair of a pair or a pair of an odd number'; therefore, 'Every member is either odd or a pair of a pair or the pair of an odd number.'

[28] It can also be composed of a categorical [disjunctive] [proposition] and a conjunctive proposition, as in our statements, 'No longer this [being] is a human than he is [also] an animal' and 'Every animal is a body'; therefore, 'Every being that is a human is also a body.'

[29] Or it can be composed of a categorical [proposition] and disjunctive propositions, as in our statements, 'Each number is either even or odd' and 'Each even [number] can then be divided into two equal'; therefore, 'Each number is either odd, or can be divided into two equal.'

[30] Or it is composed of a conjunctive [proposition] and disjunctive [proposition], as in our statements, 'As long as this [being] is a human then he is an animal' and 'Every animal is either white or black'; therefore, 'As long as this [being] is a human then he is either white or black.'

[26] وَإِنَّمَا يَكُونُ إِذَا لَمْ يَكُنْ مِنَ الْغَائِبِ كَمَا فِي
[27] وَإِنَّمَا يَكُونُ إِذَا لَمْ يَكُنْ مِنَ الْغَائِبِ كَمَا فِي
[28] وَإِنَّمَا يَكُونُ إِذَا لَمْ يَكُنْ مِنَ الْغَائِبِ كَمَا فِي
[29] وَإِنَّمَا يَكُونُ إِذَا لَمْ يَكُنْ مِنَ الْغَائِبِ كَمَا فِي
[30] وَإِنَّمَا يَكُونُ إِذَا لَمْ يَكُنْ مِنَ الْغَائِبِ كَمَا فِي

TRANSLATION

[There are] four syllogistic moods.

[31] First: As in our statement, 'Each body is formed' and 'Each thing that has been formed is temporal'; therefore, 'Each body is temporal.'

[32] Second: As in our statement, 'Each body is formed' and 'Nothing that is formed is eternal'; therefore, 'No body is eternal.'

[33] Third: As in our statement, 'Some bodies are formed' and 'Everything that is formed is temporal'; therefore, 'Some bodies are temporal.'

[34] Fourth: As in our statement, 'Some bodies are formed' and 'Nothing that is formed is eternal'; therefore, 'Some bodies are not eternal.'

[35] Fifth: As in our statement, 'Some bodies are formed' and 'Everything that is formed is temporal'; therefore, 'Some bodies are temporal.'

[36] Sixth: As in our statement, 'Some bodies are formed' and 'Nothing that is formed is eternal'; therefore, 'Some bodies are not eternal.'

[37] Seventh: As in our statement, 'Some bodies are formed' and 'Everything that is formed is temporal'; therefore, 'Some bodies are temporal.'

[38] Eighth: As in our statement, 'Some bodies are formed' and 'Nothing that is formed is eternal'; therefore, 'Some bodies are not eternal.'

[39] Ninth: As in our statement, 'Some bodies are formed' and 'Everything that is formed is temporal'; therefore, 'Some bodies are temporal.'

[40] Tenth: As in our statement, 'Some bodies are formed' and 'Nothing that is formed is eternal'; therefore, 'Some bodies are not eternal.'

[41] Eleventh: As in our statement, 'Some bodies are formed' and 'Everything that is formed is temporal'; therefore, 'Some bodies are temporal.'

[42] Twelfth: As in our statement, 'Some bodies are formed' and 'Nothing that is formed is eternal'; therefore, 'Some bodies are not eternal.'

The form of a syllogism is the combination of a syllogism's figure, which describes the position of the middle term in the premises, and the mood of each of these premises. If we multiply the possible moods with the possible figures, we would have a total of eight possible syllogistic forms. The vast majority of these forms, however, do not yield valid conclusions and thus are ignored in the study of logic. In order to test the validity of syllogisms, we must review our observations for the quality and quantity of syllogisms below.

A Universal Affirmative Proposition

B Universal Negative Proposition

C Particular Affirmative Proposition

D Particular Negative Proposition

Al-Ahmad demonstrates the four valid forms of a figure 1 syllogism, probably to keep his language simple and for the beginners. Remember that a figure 1 syllogism is:

M-P [Major Premise]

S-M [Minor Premise]

Therefore, S-P [Conclusion]

Another way to illustrate the valid moods for figure 1 syllogisms follows:

Valid Forms of Syllogisms for Figure 1

BARBARA	CELARENT
A Every M is P	E No M is P
A Every S is M	A Every S is M
A Therefore, every S is P	E Therefore, no S is P
DAVIS	FERIO
A Every M is P	E No M is P
I Some S is M	I Some S is M
I Therefore, some S is P	O Therefore, some S is not P

Form, Figure, and Moods of Syllogisms

The term "mood" comes from the Latin term *modus*, which means "way." Aristotle used this Latin term to describe Greek terms *modus*, in his *Posterior Analytics* to discuss the different types of syllogistic combinations. In the figure-based premises that result in valid conclusions, the middle term is in the first premise, and the minor premise is in the second premise. Each figure has a set of moods that are combinations of premises that differ in terms of the quality and quantity, such as AAA or EAE. However, not all of these combinations yield valid conclusions.

In the second statement, al-Ahmad mentions a minor premise [universal affirmative (A)] and a major premise [universal negative (E)]. The conclusion is therefore a universal negative (O). The mood of this syllogism as presented in this Arabic text appears to be EAE. However, A and E must be lowered for it to translate into the words and logic of a standard English logic text. In English, after lowering these, the mood is EAE, as below:

Each body is formed [universal affirmative minor premise (A)]

Nothing that is formed is eternal [universal negative major premise (E)]

Therefore, no body is eternal [universal negative conclusion (O)]

With regard to mood, it is important to highlight a significant difference in the way English and Arabic logic often written. In English logic texts, syllogisms are written in a format in which the major premise precedes the minor premise, which, in turn, is used to derive the mood of the syllogism. In al-Ahmad's text and other Arabic logic texts that read from right to left, the minor [negative] premise is mentioned before the major [affirmative] premise. Thus, if we want to translate this form Arabic text moods represented in the Latin alphabet, we must invert the major premise and the minor premises, so that the major premise is first and the minor premise is listed second. This enables us to correlate the standard syllogistic moods that figure used in European based logic texts to those in Arabic logic texts. We can see how this applies to the examples al-Ahmad gives in the language:

Every body is formed [universal affirmative minor premise (A)]

Nothing that is formed is eternal [universal negative major premise (E)]

Therefore, some bodies are temporal [particular affirmative conclusion (I)]

Therefore, some bodies are temporal [particular affirmative conclusion (I)]

Therefore, some bodies are temporal [particular affirmative conclusion (I)]

Therefore, some bodies are temporal [particular affirmative conclusion (I)]

Therefore, some bodies are temporal [particular affirmative conclusion (I)]

Therefore, some bodies are temporal [particular affirmative conclusion (I)]

Therefore, some bodies are temporal [particular affirmative conclusion (I)]

Therefore, some bodies are temporal [particular affirmative conclusion (I)]

Valid Syllogistic Forms for Figure 2

CEASE	CAMERISSE
E No P is M	A Every P is M
A Every P is M	E No S is M
E Therefore, no S is P	E Therefore, no S is P
FINSTED	BAKED
E No P is M	A Every P is M
I Some P is M	O Some P is not M
O Therefore, some S is not P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 3

BARBUTI	DAVID
A Every M is P	I Some M is P
A Every M is P	A Every M is P
I Therefore, some S is P	I Therefore, some S is P
DATUM	ELAPTION
A Every M is P	E No M is P
I Some M is P	A Every M is P
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 4

BARBARI	CELARENT
A Every M is P	E No M is P
A Every S is M	A Every S is M
A Therefore, every S is P	E Therefore, no S is P
DAVIS	FERIO
A Every M is P	E No M is P
I Some S is M	I Some S is M
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 5

BARBARI	CELARENT
A Every M is P	E No M is P
A Every S is M	A Every S is M
A Therefore, every S is P	E Therefore, no S is P
DAVIS	FERIO
A Every M is P	E No M is P
I Some S is M	I Some S is M
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 6

Valid Syllogistic Forms for Figure 7

Valid Syllogistic Forms for Figure 8

BARBUTI	DAVID
A Every M is P	I Some M is P
A Every M is P	A Every M is P
I Therefore, some S is P	I Therefore, some S is P
DATUM	ELAPTION
A Every M is P	E No M is P
I Some M is P	A Every M is P
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 9

BARBARI	CELARENT
A Every M is P	E No M is P
A Every S is M	A Every S is M
A Therefore, every S is P	E Therefore, no S is P
DAVIS	FERIO
A Every M is P	E No M is P
I Some S is M	I Some S is M
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 10

BARBARI	CELARENT
A Every M is P	E No M is P
A Every S is M	A Every S is M
A Therefore, every S is P	E Therefore, no S is P
DAVIS	FERIO
A Every M is P	E No M is P
I Some S is M	I Some S is M
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 11

BARBARI	CELARENT
A Every M is P	E No M is P
A Every S is M	A Every S is M
A Therefore, every S is P	E Therefore, no S is P
DAVIS	FERIO
A Every M is P	E No M is P
I Some S is M	I Some S is M
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 12

Valid Syllogistic Forms for Figure 13

Valid Syllogistic Forms for Figure 14

BARBUTI	DAVID
A Every M is P	I Some M is P
A Every M is P	A Every M is P
I Therefore, some S is P	I Therefore, some S is P
DATUM	ELAPTION
A Every M is P	E No M is P
I Some M is P	A Every M is P
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 15

BARBARI	CELARENT
A Every M is P	E No M is P
A Every S is M	A Every S is M
A Therefore, every S is P	E Therefore, no S is P
DAVIS	FERIO
A Every M is P	E No M is P
I Some S is M	I Some S is M
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 16

BARBARI	CELARENT
A Every M is P	E No M is P
A Every S is M	A Every S is M
A Therefore, every S is P	E Therefore, no S is P
DAVIS	FERIO
A Every M is P	E No M is P
I Some S is M	I Some S is M
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 17

BARBARI	CELARENT
A Every M is P	E No M is P
A Every S is M	A Every S is M
A Therefore, every S is P	E Therefore, no S is P
DAVIS	FERIO
A Every M is P	E No M is P
I Some S is M	I Some S is M
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 18

Valid Syllogistic Forms for Figure 19

Valid Syllogistic Forms for Figure 20

BARBUTI	DAVID
A Every M is P	I Some M is P
A Every M is P	A Every M is P
I Therefore, some S is P	I Therefore, some S is P
DATUM	ELAPTION
A Every M is P	E No M is P
I Some M is P	A Every M is P
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 21

BARBARI	CELARENT
A Every M is P	E No M is P
A Every S is M	A Every S is M
A Therefore, every S is P	E Therefore, no S is P
DAVIS	FERIO
A Every M is P	E No M is P
I Some S is M	I Some S is M
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 22

BARBARI	CELARENT
A Every M is P	E No M is P
A Every S is M	A Every S is M
A Therefore, every S is P	E Therefore, no S is P
DAVIS	FERIO
A Every M is P	E No M is P
I Some S is M	I Some S is M
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 23

BARBARI	CELARENT
A Every M is P	E No M is P
A Every S is M	A Every S is M
A Therefore, every S is P	E Therefore, no S is P
DAVIS	FERIO
A Every M is P	E No M is P
I Some S is M	I Some S is M
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 24

Valid Syllogistic Forms for Figure 25

Valid Syllogistic Forms for Figure 26

BARBUTI	DAVID
A Every M is P	I Some M is P
A Every M is P	A Every M is P
I Therefore, some S is P	I Therefore, some S is P
DATUM	ELAPTION
A Every M is P	E No M is P
I Some M is P	A Every M is P
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 27

BARBARI	CELARENT
A Every M is P	E No M is P
A Every S is M	A Every S is M
A Therefore, every S is P	E Therefore, no S is P
DAVIS	FERIO
A Every M is P	E No M is P
I Some S is M	I Some S is M
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 28

BARBARI	CELARENT
A Every M is P	E No M is P
A Every S is M	A Every S is M
A Therefore, every S is P	E Therefore, no S is P
DAVIS	FERIO
A Every M is P	E No M is P
I Some S is M	I Some S is M
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 29

BARBARI	CELARENT
A Every M is P	E No M is P
A Every S is M	A Every S is M
A Therefore, every S is P	E Therefore, no S is P
DAVIS	FERIO
A Every M is P	E No M is P
I Some S is M	I Some S is M
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 30

Valid Syllogistic Forms for Figure 31

Valid Syllogistic Forms for Figure 32

BARBUTI	DAVID
A Every M is P	I Some M is P
A Every M is P	A Every M is P
I Therefore, some S is P	I Therefore, some S is P
DATUM	ELAPTION
A Every M is P	E No M is P
I Some M is P	A Every M is P
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 33

BARBARI	CELARENT
A Every M is P	E No M is P
A Every S is M	A Every S is M
A Therefore, every S is P	E Therefore, no S is P
DAVIS	FERIO
A Every M is P	E No M is P
I Some S is M	I Some S is M
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 34

BARBARI	CELARENT
A Every M is P	E No M is P
A Every S is M	A Every S is M
A Therefore, every S is P	E Therefore, no S is P
DAVIS	FERIO
A Every M is P	E No M is P
I Some S is M	I Some S is M
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 35

BARBARI	CELARENT
A Every M is P	E No M is P
A Every S is M	A Every S is M
A Therefore, every S is P	E Therefore, no S is P
DAVIS	FERIO
A Every M is P	E No M is P
I Some S is M	I Some S is M
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 36

Valid Syllogistic Forms for Figure 37

Valid Syllogistic Forms for Figure 38

BARBUTI	DAVID
A Every M is P	I Some M is P
A Every M is P	A Every M is P
I Therefore, some S is P	I Therefore, some S is P
DATUM	ELAPTION
A Every M is P	E No M is P
I Some M is P	A Every M is P
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 39

BARBARI	CELARENT
A Every M is P	E No M is P
A Every S is M	A Every S is M
A Therefore, every S is P	E Therefore, no S is P
DAVIS	FERIO
A Every M is P	E No M is P
I Some S is M	I Some S is M
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 40

BARBARI	CELARENT
A Every M is P	E No M is P
A Every S is M	A Every S is M
A Therefore, every S is P	E Therefore, no S is P
DAVIS	FERIO
A Every M is P	E No M is P
I Some S is M	I Some S is M
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 41

BARBARI	CELARENT
A Every M is P	E No M is P
A Every S is M	A Every S is M
A Therefore, every S is P	E Therefore, no S is P
DAVIS	FERIO
A Every M is P	E No M is P
I Some S is M	I Some S is M
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 42

Valid Syllogistic Forms for Figure 43

Valid Syllogistic Forms for Figure 44

BARBUTI	DAVID
A Every M is P	I Some M is P
A Every M is P	A Every M is P
I Therefore, some S is P	I Therefore, some S is P
DATUM	ELAPTION
A Every M is P	E No M is P
I Some M is P	A Every M is P
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 45

BARBARI	CELARENT
A Every M is P	E No M is P
A Every S is M	A Every S is M
A Therefore, every S is P	E Therefore, no S is P
DAVIS	FERIO
A Every M is P	E No M is P
I Some S is M	I Some S is M
I Therefore, some S is P	O Therefore, some S is not P

Valid Syllogistic Forms for Figure 46

BARBARI</

وَلَمَّا قَبِلْنَا الْإِسْتِثْنَاءَ، فَانْتَرَفَعَتِ الدُّشُوعَةُ فِيهِ بِأَنَّهُ كَانَتْ مُتَّصِلَةً.

فَاسْتِثْنَاءٌ عَنِ الْمَقْدَمِ يُتَّبَعُ عَنِ الْخَالِي، كَقَوْلِنَا: «إِنْ كَانَ هَذَا إِنْسَانًا، فَهُوَ

عِزَّازٌ...» «لَكِنَّهُ إِنْسَانٌ» «فَهُوَ عِزَّازٌ»، وَاسْتِثْنَاءٌ لِقَبْلِ الْخَالِي يُتَّبَعُ

لِقَبْلِ الْمَقْدَمِ، كَقَوْلِنَا: «إِنْ كَانَ هَذَا إِنْسَانًا، فَهُوَ عِزَّازٌ...» «لَكِنَّهُ لَيْسَ

عِزَّازِيَّةً» «فَلَا يَكُونُ إِنْسَانًا».

وَأِنْ كَانَتْ مُتَّصِلَةً عَرِيقَةً، فَاسْتِثْنَاءٌ عَنِ أَحَدِ الْجَزْأَيْنِ يُتَّبَعُ لِقَبْلِ

الْآخَرِ، وَاسْتِثْنَاءٌ لِقَبْلِ أُخْرَاهُمَا يُتَّبَعُ عَنِ الْآخَرِ.

TRANSLATION

[41] As for the selective syllogism, (al-qiyās al-istithnāʾī) the conditional [proposition] is the major premise in it. If [the conditional syllogism] is conjunctive, then the [affirmative] selection of the antecedent results in the [affirmation of the] consequent itself. [This is according to] our saying, “If this is a human then he is an animal. He is a human. Therefore, he is an animal.” And the selection of a negation of the consequent results in the negation of the antecedent. [This is according to] our saying, “If this is a human then he is an animal. He is not an animal. Therefore, he is not human.”

[42] If it is a strong (ḥaqīqiy) disjunctive syllogism, the [affirmative] selection of one of the opposing two disjuncts results in the negation of the other and the selection of the negation of one [of the two opposing disjuncts] results in the affirmation of the other.

EXPLANATORY NOTES

How to Translate istithnāʾī

The translation of the term istithnāʾī has long been a dilemma for scholars of Arabic logic who write in English. Some have used a literal translation of the word and refer to this as a syllogism of “exclusion” or “exception.”¹⁸ This translation is problematic because it does not necessarily reflect the way al-Abhari uses it in his text, not to mention

¹⁸ Edwin Copley, “al-Abhari’s ḥaqīqiy/ʿiyy Maṣraḥ,” in *The Medieval Pre-Scholastic Volume* (London: Oxford University Press, 1933).

other Arabic texts of logic and philosophy. Additionally, the use of the term istithnāʾī in Arabic logic differs from the way it is used in the field of Arabic grammar, where the word does indeed mean exception. It appears that some translators may have assumed that the meanings of this word are the same, without noting the distinctions between its use in the field of logic versus that of grammar.

Kwame Gyekye explores the technical meaning of the word istithnāʾī in the context of Arabic logic by examining the way Greek philosophical terms were translated into Arabic in early texts.¹⁹ Gyekye states that in his translation of Aristotle’s *De Interpretatione*, Ishāq b. Ibrāhīm translated the Greek word *prothesis* (*prothesis*), which means “to add,” as istithnāʾī.²⁰ Gyekye notes that istithnāʾī is also translated as *idghā* and *zāḍ* in other places. Based on this, he argues that in its earliest appearance in texts of Arabic logic, the term istithnāʾī was used to mean “addition” and in this context, “additional assumption.”

Gyekye argues that the concept of an “additional assumption” referred to as *prothesis* was used by the Stoics to refer to the minor premise of a conditional syllogism. *Prothesis* is a synonym for *prothesis* and both refer to a form of addition. The idea being that in a selective syllogism, the minor premise is an “additional assumption” that leads to a consequent.

Gyekye also notes that the word istithnāʾī is used in other texts as a translation of the term *prothesis*, which means “further condition.”²¹ In combining these findings with other usages of the term istithnāʾī in Arabic texts, as well as Hebrew translations of texts of Arabic logic, he convincingly argues that the root of this word was most likely th-n-y, meaning “to duplicate” rather than th-n-y, meaning “to exclude.”²² The implied meaning is that the minor premise “duplicates” a portion of

¹⁸ Kwame Gyekye, “The Term Istithnāʾī in Arabic Logic,” *Journal of the American Oriental Society* 92, no. 1 (Jan.–Mar. 1972): 88–92.

¹⁹ Gyekye, 88.

²⁰ Gyekye, 89.

²¹ Gyekye, 90.

²² This understanding is also in line with that of the Stanford Philosophy. See <https://plato.stanford.edu/entries/lib-oltra-logic/>.

what appears in the major premise. He also writes that many Muslim philosophers who use the term istithnāʾī take the word for granted and do not explain its meaning or connection to the form of syllogisms they are referring to. Therefore, it is possible that originally, an early translation of the word from Greek may have been intended to mean “duplicate” or “add,” but over time it came to be accepted as a term in the field of logic. The linguistic origins of the term istithnāʾī was later problematized by modern translators who attempted to capture the English equivalent of the term.²³

Some commentators on the *Isagoge* argue that the term istithnāʾī means to exclude because the minor premise of a selective syllogism is introduced by the term *lākin* (“but”). This reasoning does not appear to be strong, however, in light of Gyekye’s research into the origins of this term in Arabic texts of logic. It is also not necessary for the minor premise to begin with the term *lākin* in order for it to fit the criteria of the istithnāʾī syllogism as described by Ibn Sīnā’s logic tradition and by extension by al-Abhari in his *Isagoge*.

Functionally, rather than the premises having a correlative relationship as in correlative syllogisms, we see that a selection of part of the major premise leads to the consequent of an istithnāʾī syllogism. The term “selection,” rather than “exclusion” or “exception,” is a more accurate description of the internal syllogistic process that distinguishes the istithnāʾī syllogism.

For this reason, I have chosen to use “selective syllogism” as a translation for qiyās al-istithnāʾī, which stands opposite the correlative syllogism (qiyās al-iktirāfī). Al-Abhari also uses the term istithnāʾī to mean selection when he writes, if we “select” or affirm the antecedent then we also affirm the consequent in a conjunctive conditional proposition. It appears that despite its likely origins from the Greek term “duplicate,” it has evolved contextually as “selection” in logic texts.

²³ Edwin Copley, “al-Abhari’s ḥaqīqiy/ʿiyy Maṣraḥ,” in *The Medieval Pre-Scholastic Volume* (London: Oxford University Press, 1933).

²⁴ This understanding is also in line with that of the Stanford Philosophy. See <https://plato.stanford.edu/entries/lib-oltra-logic/>.

statements embedded here must be true for the entire reduplicative statement to be true.

If we accept Gyekye’s argument that the origins of istithnāʾī come from “duplicate,” then it is the conclusion that is duplicated (i.e., that appears twice). It appears once in one of the premises and then reappears in the conclusion. This takes us back to our earlier discussion, based on commentators of the *Isagoge*, that in istithnāʾī syllogisms the conclusion appears explicitly (al-ḥaṣṭ) and appears somewhere in the minor and major premises before the consequent. Thus, the consequent is “duplicated” in the sense that it appears in the premises as well as the consequent. As discussed, in correlative syllogisms (iktirāfī), the conclusion does not appear explicitly in the premises, rather it appears implicitly (al-ḥaṣṭ) by virtue of its correlative relationship framed by the middle term. This is a different form of duplication than the two true statements implied in a reduplicative syllogism. The use of “duplicate,” “exception,” and “exclusion” in the titles of different forms of these syllogisms above makes it easy to form a false equivalence to the qiyās al-istithnāʾī which functions differently from all three of these forms of syllogisms.

Functionally, rather than the premises having a correlative relationship as in correlative syllogisms, we see that a selection of part of the major premise leads to the consequent of an istithnāʾī syllogism. The term “selection,” rather than “exclusion” or “exception,” is a more accurate description of the internal syllogistic process that distinguishes the istithnāʾī syllogism.

For this reason, I have chosen to use “selective syllogism” as a translation for qiyās al-istithnāʾī, which stands opposite the correlative syllogism (qiyās al-iktirāfī). Al-Abhari also uses the term istithnāʾī to mean selection when he writes, if we “select” or affirm the antecedent then we also affirm the consequent in a conjunctive conditional proposition. It appears that despite its likely origins from the Greek term “duplicate,” it has evolved contextually as “selection” in logic texts.

Functionally, rather than the premises having a correlative relationship as in correlative syllogisms, we see that a selection of part of the major premise leads to the consequent of an istithnāʾī syllogism. The term “selection,” rather than “exclusion” or “exception,” is a more accurate description of the internal syllogistic process that distinguishes the istithnāʾī syllogism.

For this reason, I have chosen to use “selective syllogism” as a translation for qiyās al-istithnāʾī, which stands opposite the correlative syllogism (qiyās al-iktirāfī). Al-Abhari also uses the term istithnāʾī to mean selection when he writes, if we “select” or affirm the antecedent then we also affirm the consequent in a conjunctive conditional proposition. It appears that despite its likely origins from the Greek term “duplicate,” it has evolved contextually as “selection” in logic texts.

²⁴ This understanding is also in line with that of the Stanford Philosophy. See <https://plato.stanford.edu/entries/lib-oltra-logic/>.

The Structural Variations of Selective Syllogisms

1. Conditional Conjunctive

Al-Abhari provides the basic structures of selective syllogisms in his *Isagoge*. The first is composed of a major premise (maṣraḥ), in this case known as an antecedent (muqaddam), since it is a conditional proposition. The minor premise is a categorical proposition that either posits (waḍʿ) one of the terms of the condition in the major premise or negates one of the terms of the condition of the major premise.

Al-Abhari’s use of the term *maṣraḥ* might be confusing because, when the term is used in the context of the entire syllogism, the major premise is the proposition, that is, the *maṣraḥ*. By contrast, when *maṣraḥ* is used in the context of a categorical proposition (*ḥaqīqiy*), it is the subject (*muṣraḥ*) and the predicate is known as *ḥāḍir*. The conclusion of a selective syllogism is known as the consequent (*ḥāḍir*). Al-Abhari provides the following example:

If this is human then he is an animal. [Major Premise/Antecedent]
He is human. [Minor Premise]
Therefore, he is an animal. [Consequent]

Unlike the correlative syllogisms, the minor premise does not form a correlative relationship between the two premises through a middle term. Rather, in a selective syllogism, the minor premise forces a selection of one of the conditions set in the major premise. In this case, we must select either an affirmation or a negation of the major term. Also, the consequent is duplicated in the selective syllogism where “he is an animal” is mentioned explicitly (al-ḥaṣṭ) in the premises, then appears again in the consequent.

In the *Isagoge* al-Abhari outlines the two forms of valid conditional syllogisms. The first form is with an antecedent that makes a conditional statement in the form of a major premise. This is followed by a minor premise that affirms the antecedent. In Western logic, this format is known as a method of affirming (Latin, *modus ponens*).

The second valid way to construct a conditional syllogism is by positing a conditional proposition in the antecedent, then denying the consequent. If the consequent is denied then the antecedent must also be denied. In Western logic, this is known as a method of denying (Latin, *modus tollens*). In both cases there is a parallel relationship similar to the rules of conditional propositions in which affirming the antecedent results in affirming the consequent. Similarly, denying the consequent results in denying the antecedent. This parallelism is what is referred to as a *ḥaṣṭiyah* (“necessary”) parallel connection between the terms of the condition in the antecedent. In debates, making an argument by denying the consequent is useful if one is trying to demonstrate the absurdity of the antecedent. This method of argumentation is known as *reductio ad absurdum*.

In addition, the affirmative and negative relationship between the antecedent and the consequent is not bidirectional. Since the consequent is universal or broader than the antecedent, an affirmation of the antecedent requires an affirmation of the consequent. But an affirmation of the consequent does not require an affirmation of the antecedent. Assuming the truth of the antecedent based on the truth of the consequent is known as the *fallacy of affirming the consequent*. The following example clarifies this:

If ‘Aisha is studying, then she is at home.
‘Aisha is studying.
Therefore, she is at home.

While the conditional statement in the major premise claims that ‘Aisha must be at home if she is studying, it does not state that she must necessarily be studying if she is at home. The conditional statement is not bidirectional. ‘Aisha can be at home doing something else, unrelated to studying. Thus, assuming that an affirmation of the consequent, “she is at home,” necessitates an affirmation of the antecedent is an invalid conclusion and falls into the fallacy of affirming the consequent. However, the syllogism above, in which the antecedent is affirmed by stating that ‘Aisha is studying is valid

If ‘Aisha is studying, then she is at home.
‘Aisha is studying.
Therefore, she is at home.

While the conditional statement in the major premise claims that ‘Aisha must be at home if she is studying, it does not state that she must necessarily be studying if she is at home. The conditional statement is not bidirectional. ‘Aisha can be at home doing something else, unrelated to studying. Thus, assuming that an affirmation of the consequent, “she is at home,” necessitates an affirmation of the antecedent is an invalid conclusion and falls into the fallacy of affirming the consequent. However, the syllogism above, in which the antecedent is affirmed by stating that ‘Aisha is studying is valid

If ‘Aisha is studying, then she is at home.
‘Aisha is studying.
Therefore, she is at home.

While the conditional statement in the major premise claims that ‘Aisha must be at home if she is studying, it does not state that she must necessarily be studying if she is at home. The conditional statement is not bidirectional. ‘Aisha can be at home doing something else, unrelated to studying. Thus, assuming that an affirmation of the consequent, “she is at home,” necessitates an affirmation of the antecedent is an invalid conclusion and falls into the fallacy of affirming the consequent. However, the syllogism above, in which the antecedent is affirmed by stating that ‘Aisha is studying is valid

In the *Isagoge* al-Abhari outlines the two forms of valid conditional syllogisms. The first form is with an antecedent that makes a conditional statement in the form of a major premise. This is followed by a minor premise that affirms the antecedent. In Western logic, this format is known as a method of affirming (Latin, *modus ponens*).

because affirming the antecedent results in affirming the consequent which is that she is at home.

In the *Isagoge* al-Abhari states that a negation of the consequent must result in the negation of the antecedent (i.e., *modus tollens*). But this rule too, is unidirectional. A negation of the antecedent does not require a negation of the consequent. For example,

If ‘Aisha is studying, then she is at home.
‘Aisha is not studying.
Therefore, she is not at home.

Thus, this is an invalid syllogism because ‘Aisha can be at home, but not studying. But according to the major premise, if she is studying she must be at home. However, her being at home does not mean she is studying. Assuming that a negation of the antecedent requires a negation of the consequent is another fallacy known as the *fallacy of denying the antecedent*. It is helpful to recall the two major rules discussed earlier regarding the validity of conditional syllogisms. These are:

1. If the antecedent is true, the consequent must also be true. However, this is unidirectional. The truth of the consequent does not require that the antecedent also be true.

2. To negate the consequent means that the antecedent must also be negated. But to negate the antecedent does not necessarily mean the consequent must also be negated.

2. Conjunctive Syllogisms

Although al-Abhari does not mention this explicitly in the *Isagoge*, it is helpful to also consider non-conditional conjunctive syllogisms, or what is known in English logic as “conjunctive syllogisms.” *Conjunctive syllogisms* are those that have a conjunctive proposition in the major premise that states that two conjuncts cannot occur simultaneously. Rather than a format of “if A then B” that is characteristic of conjunctive conditional propositions, conjunctive syllogisms deny that

²⁵ Edwin Copley, “al-Abhari’s ḥaqīqiy/ʿiyy Maṣraḥ,” in *The Medieval Pre-Scholastic Volume* (London: Oxford University Press, 1933).

two things can be joined without placing a conditional phrase in the major premise. The minor premise then affirms or negates one of the conjuncts. For example,

No one can text and drive carefully at the same time.
Zaynab is driving carefully.
Therefore, she cannot be texting.

In the syllogism above two conjuncts are mutually exclusive, without being a conditional sentence. Furthermore, the minor premise is a selection of one of the conjuncts that leads to the consequent, thus making it a selective syllogism. However, for conjunctive syllogisms, certain rules for validity must be taken into account. First, we must consider the nature of the conjunctive proposition in the major premise. Are the two conjuncts exhaustive of any other possibilities not mentioned as conjuncts? If they are exhaustive of any other possibility other than the two conjuncts then we can either deny or affirm a conjunct in the major premise and the syllogism remains valid. For example:

Zayd is either asleep or awake.
Zayd is not asleep.
Therefore, he must be awake.

This is a valid syllogism because the conjuncts are exhaustive of any possibility other than being asleep or awake. There are no third options. This means that it is valid for the minor premise to be a negation of one of the conjuncts. However, in a conjunctive syllogism that is not exhaustive of all other possibilities other than the conjuncts, a minor premise may affirm but cannot deny a conjunct to form a valid conclusion. The following is an example of such a conjunctive syllogism:

Zayd is either asleep or baking a cake.
Zayd is not asleep.
Therefore, Zayd is baking a cake.

Two things can be joined without placing a conditional phrase in the major premise. The minor premise then affirms or negates one of the conjuncts. For example,

²⁶ Edwin Copley, “al-Abhari’s ḥaqīqiy/ʿiyy Maṣraḥ,” in *The Medieval Pre-Scholastic Volume* (London: Oxford University Press, 1933).

The above is an invalid syllogism because it is possible that Zayd is not asleep but that he is also not baking a cake. The two conjuncts are not exhaustive of the possibilities other than what is mentioned. Therefore, a denial in the minor premise is not valid, but an affirmation is valid. For example,

Zayd is either asleep or baking a cake.
Zayd is baking a cake.
Therefore, Zayd is not asleep.

Or
Zayd is either asleep or baking a cake.
Zayd is asleep.
Therefore, Zayd is not baking a cake.

In both cases the affirmation in the minor premise leads to a valid syllogism. Thus, the rule for conjunctive syllogisms is the following. If the conjuncts in the major premise are exhaustive of any possibility other than the conjuncts, then the minor premise can either affirm or negate the major premise. If the conjunctive proposition in the major premise is not exhaustive, then the minor premise can only affirm a conjunct in the major premise.

3. Disjunctive Syllogisms

Disjunctive syllogisms are the second form of selective syllogisms that al-Abhari highlights. Recall that disjunctive propositions are types of propositions that are “either-or” statements. In a disjunctive syllogism, a major premise is composed of a disjunctive proposition and the minor premise affirms or negates one of the disjuncts in the major premise, which is a disjunctive proposition. In doing so the minor premise selects one of the disjuncts, either a or b, by saying which one (a or b) it is. Al-Abhari simplifies his discussion of disjunctive syllogisms by focusing on strong disjunctive syllogisms, without mentioning weak disjunctive syllogisms. He uses the term *ḥaqīqiy* (real) to refer to what is known in English logic as “strong” disjunctives.

²⁷ Edwin Copley, “al-Abhari’s ḥaqīqiy/ʿiyy Maṣraḥ,” in *The Medieval Pre-Scholastic Volume* (London: Oxford University Press, 1933).

From our discussion on strong and weak disjunctive propositions, we know that strong disjunctives are propositions in which only one of the disjuncts can be true. It is not possible for both of them to be true, as this makes them mutually exclusive (ḥaṣṭiyah al-jamʿ); nor can both disjuncts be false (ḥaṣṭiyah al-ḥaṣṭ). Thus, in the example that al-Abhari cites in the section on disjunctive propositions, “numbers are either even or odd,” only one of the two options can be true and neither of them can be false. A whole number must be either even or odd. It cannot be both and it cannot be neither. This means that the selection of one automatically eliminates the other. Syllogisms composed of strong disjunctive propositions in their premise are therefore valid regardless of whether the minor premise affirms or denies the disjunctive major premise.

Weak disjunctive syllogisms are more complicated. In a weak disjunctive proposition, the disjuncts can be both true or only one can be true. However, they cannot both be false. This means for a weak disjunctive syllogism to be valid, the minor premise can only deny one of the disjuncts to yield a necessary conclusion. An affirmation of a disjunct does not automatically mean that the other disjunct in the syllogism is false, since unlike a strong disjunctive syllogism, it is possible for both disjuncts of the major premise to be true. For example:

Zayd wants to order either dinner or dessert.
Zayd does not want to order dinner.
Therefore, Zayd will order dessert.

A denial of one of the disjuncts above results in the other. However, an affirmation of one of the disjuncts does not mean the other one is false. If Zayd wants to order dinner, this does not mean that Zayd does not also want to order dessert (since the major premise here is a weak rather than strong disjunct). The mistake of assuming that an affirmation of a disjunct in a weak disjunctive syllogism results in the denial of the other is known as the *fallacy of affirming a weak disjunct*.

²⁸ Edwin Copley, “al-Abhari’s ḥaqīqiy/ʿiyy Maṣraḥ,” in *The Medieval Pre-Scholastic Volume* (London: Oxford University Press, 1933).

The Five Syllogistic Arts

[43] **Demonstration** (*burhān*) is a [type of] syllogism comprised of apodictic premises [from which] to derive certain conclusions.

[44] **Apodictic premises are divided into six categories**

[45] (1) **Axioms** (*awwalīyyāt*) like our statement, "one is half of two" or "the whole is greater than its parts."

[46] (2) **Observational Propositions** (*mushāhadāt*) like our statement, "the sun is bright," and "fire burns."

[47] (3) **Empirical Propositions** (*mujarrabāt*) like our statement, "drinks made of bindweed alleviate yellow bile."

[48] (4) **Intuitive Premises** (*hadsīyyāt*) like our statement, "the light of the moon is derived from the light of the sun."

[49] (5) **Recurrent mass transmitted** (*tawātūr*) reports like our statement, "Muhammad ﷺ proclaimed his prophecy," and "miracles were performed by his hand."

[50] (6) **Innate Premises** (*fīrīyyāt*) are assertions that include syllogisms that must naturally accompany them because of a preconceived intermediate [principle] already present in the mind. For example, [we say] "four is an even [number]," because of the preconception that it [four] can be divided into two equal parts.

الصَّنَائِعَاتُ الْخَمْسُ

[٤٣] الْبُرْهَانُ هُوَ قِيَاسٌ مُؤَلَّفٌ مِنْ مُقَدَّمَاتٍ يَقِينَةٍ لِإِتْنَائِحِ الْيَقِينِ.

[٤٤] وَالْيَقِينِيَّاتُ سِتَّةٌ أَقْسَامُ:

[٤٥] ١ - أَوَّلِيَّاتٌ: كَقَوْلِنَا: «الْوَاحِدُ يَصِفُ الْإِثْنَيْنِ» وَ «الْكُلُّ أَكْثَمُ مِنَ الْجُزْءِ».

[٤٦] ٢ - وَمُشَاهَدَاتٌ: كَقَوْلِنَا: «الشَّمْسُ مُشْرِقَةٌ»، وَ «النَّارُ مُحْرِقَةٌ».

[٤٧] ٣ - وَجَرَبَاتٌ: كَقَوْلِنَا: «شَرِبْتُ السَّقْمُونِيَّ يُسَهِّلُ الصَّغْرَاءَ».

[٤٨] ٤ - وَعَدْسِيَّاتٌ: كَقَوْلِنَا: «نُورُ الْقَمَرِ مُسْتَفَادٌ مِنَ الشَّمْسِ».

[٤٩] ٥ - وَمُتَوَاتِرَاتٌ: كَقَوْلِنَا: «مُحَمَّدٌ عَلَيْهِ الصَّلَاةُ وَالسَّلَامُ ادَّعى النَّبُوءَةَ، وَأَتَاهُ الْمُعْجِزَةُ عَلَى يَدِهِ».

[٥٠] ٦ - وَقَضَائِيَا قِيَاسَاتُهَا مَعَهَا: كَقَوْلِنَا: «الرَّابِعَةُ رُوحٌ» بِسَبَبِ وَسَطٍ حَاضِرٍ فِي الدُّخَانِ وَهُوَ الْإِتِّسَامُ بِتَسَاوِيَيْنِ.

TRANSLATION

The Five Syllogistic Arts

[43] **Demonstration** (*burhān*) is a [type of] syllogism comprised of apodictic premises [from which] to derive certain conclusions.

[44] **Apodictic premises are divided into six categories**

[45] (1) **Axioms** (*awwalīyyāt*) like our statement, "one is half of two" or "the whole is greater than its parts."

[46] (2) **Observational Propositions** (*mushāhadāt*) like our statement, "the sun is bright," and "fire burns."

[47] (3) **Empirical Propositions** (*mujarrabāt*) like our statement, "drinks made of bindweed alleviate yellow bile."

[48] (4) **Intuitive Premises** (*hadsīyyāt*) like our statement, "the light of the moon is derived from the light of the sun."

[49] (5) **Recurrent mass transmitted** (*tawātūr*) reports like our statement, "Muhammad ﷺ proclaimed his prophecy," and "miracles were performed by his hand."

[50] (6) **Innate Premises** (*fīrīyyāt*) are assertions that include syllogisms that must naturally accompany them because of a preconceived intermediate [principle] already present in the mind. For example, [we say] "four is an even [number]," because of the preconception that it [four] can be divided into two equal parts.

EXPLANATORY NOTES

The meaning of *burhān* (lit., "evidence" or "clear proof") varies based on its context. In the context of Qur'ānic studies, *al-Burhān* is another name for the Qur'ān. The Qur'ān refers to itself as *al-Burhān* (the decisive proof that elucidates right from wrong). In the context of Arabic logic, the word *burhān* represents the concept of *apodexis*, as derived from Aristotle's *Posterior Analytics*. According to Aristotle, *apodexis* refers to a demonstration that is a "deduction that produces knowledge."²³ Aristotle investigates how knowledge is derived to yield certainty using syllogisms. This means that not all syllogisms yield knowledge that is indisputably true if the premises are also indisputably true. As we see, some syllogisms evoke emotional responses that do not necessarily result in objectively true conclusions that result, by necessity, from unquestionably true premises. In Arabic this concept of the indisputable truth of a conclusion derived from true premises is described as *yaqīn* (Greek, *apodexis*). An apodictic (*yaqīnī*) premise is one that is clearly established and does not require proof.

Propositions that are regarded as self-evident (*badhīyyāt*) in their truth are divided into six categories. The first are axioms (*awwalīyyāt*). Axioms are known to be true without any intermediary to bring about a conclusion. They are regarded as self-evidently true and as a starting point on which further arguments can be built. Al-Abhari provides examples such as, "one is half of two" and "the whole is greater than its parts." In both cases, the conception of the subject and predicate are sufficient to establish the veracity of these propositional statements without the necessity of further syllogistic reasoning to demonstrate its truth. That is, the examples provided are true by their very definition.

If conceiving of the subject and the predicate in the mind is insufficient to establish the truth of a statement, then an intermediary is necessary to establish its truth. When the intermediary is an external

²³ *Stanford Encyclopedia of Philosophy*: <https://plato.stanford.edu/entries/aristotle-logic/#DemDemSci>.

sense, the proposition is known as a sensible (*hissīyya*)²⁴ proposition and when the intermediary is an internal sense derived from introspective understanding, it is known as a reflective (*wijdānīyya*) proposition. When sensible and reflective propositions combine to form self-evident truths based on perception, they are called "observational propositions" (*mushāhadāt*). Al-Abhari provides examples such as, "the sun is bright" and "fire burns." In both cases, senses lead to introspective conclusions based on observations (one senses light with the eyes or heat with the limbs and concludes that the sun is bright and fire burns).

If the intermediary in deriving a judgment is present simultaneously with the conception of the subject and predicate, then it is known as an innate premise, or a "proposition whose logical conclusion is contained within them."²⁵ In Arabic logic, these types of innate premises are referred to as *fīrīyyāt*. The text provides the following example: if we take it to be true that four is an even number, this leads to a simultaneously accepted truth that four can be divided into two even halves.

An "intuitive premise" (*hadsīyya*) is one in which a proposition does not have an obvious intermediary, yet thinking about the subject and predicate leads to an immediate intellectual connection and conclusion. That is, one naturally intuits a particular conclusion when the subject and predicate are presented. The text provides the example that the light of the moon is derived from the sun. While some may debate whether this knowledge is truly intuitive, at least without studying the natural sciences, regardless, when someone looks at the moon they generally make the connection that its light is reflected from the sun. Note that al-Abhari, who published this text almost a millennium ago, was familiar with the sophisticated tradition of astronomy in the

²⁴ In this context, sensible (*hissīyya*) refers to what is perceptible by the senses.

²⁵ Janis Esots, "al-Burhān," *Encyclopaedia Islamica*, online: https://referenceworks.brillonline.com/entries/encyclopaedia-islamica/burhan-COM_05000036?s.num=4&s.Lsz_parent=s.fbook.encyclopaedia-islamica&s.q=al-burhan.

Aristotle's term *quia*, which roughly means "that which is because," as it implies an effect, since an effect is "that which is because" of a cause.

Burhān innī are also known as a *posteriori* demonstrations, in which an effect is "posterior" or comes after a cause.

Burhān lammī are syllogisms in which the cause is known before the effect. The cause is mentioned in the premises and leads to the effect that is in the conclusion. These demonstrations are known from the Latin *propter quid* ("cause of something"), and are referred to as *a priori* demonstrations because the cause comes prior to the effect in the syllogism. *Lammī* is derived from the word *lāmā* ("why"). Thus, *burhān lammī* refers to a demonstration whose premises show why an effect is the case. That is, the cause ("the why") leads to the establishment of the effect as true. By contrast, a *burhān innī* demonstration starts with the effect as being an established truth and finds its cause in the conclusion.

Burhān Innī (Quia) Demonstration

Zaynab is a lawyer.

Anyone who is a lawyer must have gone to law school.

Therefore, Zaynab went to law school.

Burhān Lammī (Propter Quid) Demonstration

Anyone who wants to be a lawyer must go to law school.

Zaynab went to law school.

Therefore, Zaynab must be a lawyer.

In the first example, the effect (Zaynab is a lawyer) is stated as fact and is used to derive the cause that leads to it (that she must have gone to law school). In the second example, the causes are presented first and lead to the effect (that Zaynab is a lawyer) in the conclusion.

Effect → Cause = *Burhān Innī (Quia)*
Cause → Effect = *Burhān Lammī (Propter Quid)*

In addition to its relevance to questions of epistemology and the knowledge of God's existence in theological (*kalām*) literature, the way in which conclusions are derived also relates to fields such as jurisprudence (*fiqh*). *Fiqh* rulings that use demonstrative proofs based on *burhān lammī* are known as *qiyās al-illa* and *fiqh* rulings derived from demonstrative proofs that are *burhān innī* are categorized as *qiyās al-dalāla*.²⁶

²⁶ Yusuf Şevki Yavuz, "Burhan," in *İslam Ansiklopedisi* (İstanbul: Türkiye Diyanet Vakfı, 1988), 6:429–430.

[51] **Dialectic** (*ḥadaf*) is a syllogism composed of premises that are commonly accepted [as true].

[52] **Rhetoric** (*ḥaṭāba*) is a syllogism composed of premises accepted from a credible individual or [one whose opinions] are preferred.

[53] **Poetics** (*shīʿ*) are syllogisms composed of premises that bring joy to the heart or [cause it to] contract.

[54] **Sophistry** (*mughālaṭa*) are syllogisms composed of false premises that resemble the truth or commonly accepted [matters], or [they could be composed of] premises [based on] delusions [or superstitions] (*waḥm*).

[55] The reliable [syllogism, in terms of accuracy and truth] is that of **demonstrative** [proofs] (*ḥurhān*), nothing else. This is the end of the epistle on logic.

وَالْحَدَفُ: وَهُوَ قِيَاسٌ مُؤَلَّفٌ مِنْ مُقَدِّمَاتٍ مَشْهُورَةٍ.

وَالْحَقَائِبَةُ: وَهِيَ قِيَاسٌ مُؤَلَّفٌ مِنْ مُقَدِّمَاتٍ مَقْبُولَةٍ مِنْ شَخْصٍ مُعْتَقَدٍ

فِيهِ، أَوْ مَنطَوْنَةٍ.

وَالشَّعْرُ: وَهُوَ قِيَاسٌ مُؤَلَّفٌ مِنْ مُقَدِّمَاتٍ لَتَبْسِطٍ بِهَا الشَّعْرُ أَوْ

تَلْقِيشٍ.

وَالْمُعَالِظَةُ: وَهِيَ قِيَاسٌ مُؤَلَّفٌ مِنْ مُقَدِّمَاتٍ كَذِبَةٍ عَجِيبَةٍ بِالْحَقِّ أَوْ

بِالْمَشْهُورَةِ، أَوْ مِنْ مُقَدِّمَاتٍ وَهْمِيَّةٍ كَذِبِيَّةٍ.

وَالْمَعْنَى هُوَ الْإِثْرَانُ لَا غَيْرُ، وَإِنْ كَانَ هَذَا آخِرَ الرِّسَالَةِ فِي الْقَضِيَّةِ.

TRANSLATION

[51] **Dialectic** (*ḥadaf*) is a syllogism composed of premises that are commonly accepted [as true].

[52] **Rhetoric** (*ḥaṭāba*) is a syllogism composed of premises accepted from a credible individual or [one whose opinions] are preferred.

[53] **Poetics** (*shīʿ*) are syllogisms composed of premises that bring joy to the heart or [cause it to] contract.

[54] **Sophistry** (*mughālaṭa*) are syllogisms composed of false premises that resemble the truth or commonly accepted [matters], or [they could be composed of] premises [based on] delusions [or superstitions] (*waḥm*).

[55] The reliable [syllogism, in terms of accuracy and truth] is that of **demonstrative** [proofs] (*ḥurhān*), nothing else. This is the end of the epistle on logic.

EXPLANATORY NOTES

Dialectic (*ḥadaf*)

Dialectic (*ḥadaf*) is described as an argument based on premises that may not necessarily be true; however, they are commonly held to be true by the target audience. This idea of commonly held opinions is derived from Aristotle's concept of *endoxa* described in his *Topics* as ideas that are so well-established that they do not require examination. Commentaries on al-Abhari's *Isagoge* categorize these types of beliefs into the following.

[a] **Beliefs related to the greater good, such as justice is good and oppression is wrong.**

[b] **Beliefs regarding compassion and kindness, such as, "generosity toward the poor is praiseworthy," or "it is a duty to take care of the weak."**

[c] **Beliefs related to safety, such as, "protecting one's household is necessary," or "revealing one's nakedness in public is blameworthy."**

[d] **Beliefs derived from customary practice, such as, meat consumption is reprehensible for some while it is the norm for others.**

This form of syllogism differs from syllogisms based on demonstrative proof (*ḥurhān*) in key aspects, one of which is in the reliability of the truth on which the premises are based. In the absence of clearly established forms of demonstrative proofs, an individual engages in dialectic or debate with the intent of silencing or persuading his opponent by referencing commonly held opinions. This form of argumentation is weak because of the subjective nature of these opinions, because in order to be effective, they rely on assumptions that the audience must also share. The absence of an objectively verifiable statement in the form of demonstration makes these types of arguments vulnerable to deconstruction once the cognitive frameworks on which these arguments are made are shown to be faulty, or relative to one's perspective.

Rhetoric (*ḥaṭāba*)

Al-Abhari describes rhetoric as a form of persuasive speech in which the premises for one's argument are based on religious or dogmatic beliefs, such as the belief in miracles, the acceptance of scriptures as being derived from God's speech, or the miraculous feats of saints (*karāmāt al-awliyāʾ*). Alternatively, rhetoric (*ḥaṭāba*) can assume the truth of premises based on an appeal to commonly accepted

authorities or experts (e.g., religious scholars, scientists, physicians, specialists in a particular field, or individuals regarded as saints with special gnostic capacities).²⁷

The weakness of this approach is its reliance on the uniformity of the beliefs of the audience and those making the argument. The premises of the argument may not hold true to those who do not share common religious beliefs or who do not have confidence in the same expert authorities. The word for a religious sermon in Arabic is *ḥaṭaba*, which shares the same root as *ḥaṭāba*. The type of speech in a *ḥaṭaba* is one in which the speaker evokes shared religious beliefs with the audience; this enables him to persuade them or to move their hearts. Such a form of persuasive speech, however, may be less effective when addressed to those of other faiths.

Poetry (*Shīʿ*)

Poetry is composed of statements intended to spark the listeners' imagination by evoking emotional responses. Sometimes metaphors or similes are used, such as "roses are like rubies that emerge from the earth," or "her words pierced his heart like a dagger." Both phrases evoke an emotional response. Such creative language need not necessarily be false in their broader meaning. They may be false or true statements that are intended to rouse an audience's sentiment to make them partial to a particular opinion on an issue. This style can be presented in rhyme, prose, song, or speech.

Commentators on the *Isagoge* have raised the question as to whether imaginative words can be considered syllogisms. For instance, some may respond to this concern by saying that it is considered a form of persuasion and therefore, it is another way of making a case or arguing for a matter. Rather than appealing to the intellect, it appeals to the emotions because human emotions can persuade or dissuade people.²⁸

²⁷ Maḥmūd Ḥasan al-Maghribī, *Mughniʾ al-ḥalāb* (Damascus: Dār al-Bayrūtī, 2009), 249–251.

²⁸ al-Maghribī, *Mughniʾ al-ḥalāb*, 251.

For example, in the United States during the 1960s and 1970s, songs of protest were used by anti-war activists. Pep rallies for sports teams or battle music (e.g., the use of the *mehter* band by Ottomans during battles) are examples of this use of poetics to evoke specific emotions or opinions. National anthems are contemporary methods of strengthening a communal identity based on what are often carefully selected historical narratives, or myths, in the words of these songs. Other examples of the use of emotive language to elicit a sentimental response of anger, passion, or blind commitment can take the form of polemics. Polemical speeches may be political, religious, or other forms of divisive speech that create a strong supportive reaction in listeners.

More positive religiously-themed poetry takes the form of *manẓūms* (sung to evoke love for the Prophet Muḥammad during the celebration of his birth); these *manẓūms* engender a sense of communal devotion and individual belief in his prophecy. Similarly, among Shīʿī Muslims in particular, poetic recitations recalling the painful events of Karbala remind listeners of the tragedy of that day.

Sophistry (*Mughālaṭa*)

Sophistry is the use of arguments to influence opinion with premises based on logical fallacies that may appear to be true, or with deceptive statements. These types of false premises are not descriptions of senses or emotions, since describing matters that cannot be verified or denied does not fall under the types of sophistic statements mentioned.²⁹

The term "sophistry" originates from Aristotle's *Sophistical Refutations*, in which he writes about false arguments that are commonly used to mislead listeners. During his time, individuals known as sophists used to perform these types of linguistic maneuverings for entertainment. Arabic logicians including al-Fārābī and Ibn Sīnā wrote commentaries on Aristotle's *Sophistical Refutations*; they translated this concept as *mughālaṭa* or *ṣafṣafa*. *Mughālaṭa* (from the root gh-l-ṭ)

²⁹ Ibid., 252–253.

implies something that is incorrect, in this case incorrect arguments. *Ṣafṣafa* is a form of the word *ṣafṣāʾ*ṣṣ; this is the term "sophistry" that appears in Aristotle's works and found its way into Islamic philosophy and logic.

The aim of such syllogisms is to manipulate language to misrepresent the truth, defeat an opponent in debate through word tricks, or appeal to commonly-held prejudices and desires to influence opinion rather than present rational arguments. Such speech is often used in political contexts to rally support or in polemics to promote an ideological position with aggressive appeals to emotion and reliance on logical fallacies.³⁰

Ibn Sīnā wrote in his *Shifāʾ* that those who engage in sophistry (*mughālaṭa*) do so for three reasons: (1) Despite seeking the truth, they fall into logical fallacies because they have an insufficient understanding of sound arguments; (2) In order to defeat an opponent in a debate, they manipulate language or engage in deceptive games of logic; or (3) They want to appear knowledgeable about a matter and use demagoguery and logical fallacies to feign expertise.³¹

Samples of Logical Fallacies

1) **Equivocation** involves using a word in different ways throughout an argument. A word with multiple meanings, but which is consistently used in an argument with only one meaning, is said to be used univocally.

Example: Only man [humans] is rational, and no woman is a man [male], therefore, no woman is rational.

Here the word "man" may refer to humanity, or it may refer to a male human being. In this argument, in order to conclude that

³⁰ Maḥmūd Kaya, "Mughalata," in *İslam Araştırmaları* (İstanbul: Türkiye Diyanet Vakfı, 1988), 30327–3273.

³¹ Ibid.

no woman is rational, there is a shift from the definition of "man" as a reference to humanity to "man" as a male.

2) **Straw Man arguments** are those that intentionally misrepresent the argument of one's opponent to make it seem ridiculous and/or to make it easier to rebut. Hence, one is creating a "straw man" that is easily brought down.

Example: Society must support its needy population by providing free access to healthcare and education, which are not readily available because the system limits opportunities for some members.

Straw man: You say that society should give free benefits to people without their working for it. Such a practice would encourage apathy and prevent people from striving to succeed.

3) **Ad Hominem** (Latin, "to the man") arguments are those in which one personally attacks the man or woman making the argument rather than engaging with the argument itself.

Example: We are postponing our trip because of the impact of war on safety conditions in the countries we planned to visit.

Ad hominem: You are postponing the trip because you prefer to stay at home.

While it may be true, validly engaging an argument entails responding to the cause provided by the claimant, which in this case is safety on the trip. Attacking the opponent's motives does not disprove the argument and invalidates the response of the respondent.

4) **No True Scotsman** arguments are fallacies that occur when a claim is made about a mutually agreed-on group of things or individuals. Rather than disputing the claim itself, the opponent engaging in this fallacy changes the terms of membership in this group.

Example: Californians have difficulty adjusting to Chicago winters.

³² Ibid., 252–253.

³³ Ibid.

no woman is rational, there is a shift from the definition of "man" as a reference to humanity to "man" as a male.

2) **Straw Man arguments** are those that intentionally misrepresent the argument of one's opponent to make it seem ridiculous and/or to make it easier to rebut. Hence, one is creating a "straw man" that is easily brought down.

Example: Society must support its needy population by providing free access to healthcare and education, which are not readily available because the system limits opportunities for some members.

Straw man: You say that society should give free benefits to people without their working for it. Such a practice would encourage apathy and prevent people from striving to succeed.

3) **Ad Hominem** (Latin, "to the man") arguments are those in which one personally attacks the man or woman making the argument rather than engaging with the argument itself.

Example: We are postponing our trip because of the impact of war on safety conditions in the countries we planned to visit.

Ad hominem: You are postponing the trip because you prefer to stay at home.

While it may be true, validly engaging an argument entails responding to the cause provided by the claimant, which in this case is safety on the trip. Attacking the opponent's motives does not disprove the argument and invalidates the response of the respondent.

4) **No True Scotsman** arguments are fallacies that occur when a claim is made about a mutually agreed-on group of things or individuals. Rather than disputing the claim itself, the opponent engaging in this fallacy changes the terms of membership in this group.

Example: Californians have difficulty adjusting to Chicago winters.

Example: Vote for my party's candidate for presidency. If the other candidate becomes president, she will raise taxes and repeal social security.

³⁴ Ibid., 252–253.

³⁵ Ibid.

no woman is rational, there is a shift from the definition of "man" as a reference to humanity to "man" as a male.

2) **Straw Man arguments** are those that intentionally misrepresent the argument of one's opponent to make it seem ridiculous and/or to make it easier to rebut. Hence, one is creating a "straw man" that is easily brought down.

Example: Society must support its needy population by providing free access to healthcare and education, which are not readily available because the system limits opportunities for some members.

Straw man: You say that society should give free benefits to people without their working for it. Such a practice would encourage apathy and prevent people from striving to succeed.

3) **Ad Hominem** (Latin, "to the man") arguments are those in which one personally attacks the man or woman making the argument rather than engaging with the argument itself.

Example: We are postponing our trip because of the impact of war on safety conditions in the countries we planned to visit.

Ad hominem: You are postponing the trip because you prefer to stay at home.

While it may be true, validly engaging an argument entails responding to the cause provided by the claimant, which in this case is safety on the trip. Attacking the opponent's motives does not disprove the argument and invalidates the response of the respondent.

4) **No True Scotsman** arguments are fallacies that occur when a claim is made about a mutually agreed-on group of things or individuals. Rather than disputing the claim itself, the opponent engaging in this fallacy changes the terms of membership in this group.

Example: Californians have difficulty adjusting to Chicago winters.

Example: Vote for my party's candidate for presidency. If the other candidate becomes president, she will raise taxes and repeal social security.

³⁶ Ibid., 252–253.

³⁷ Ibid.

This argument uses fear to persuade a group into an action rather than presenting evidence that demonstrates that the candidate they support is the best person for the task.

7) **Guilt by Association** is an attempt to discredit an opponent's argument by indicating his association with a guilty party or detested group.

Example: The study of logic is wrong because it entered Islamic thought through philosophers who were heretics.

Such an argument is invalid because it assumes that the audience discredits philosophers for reasons of heresy and then it uses this bias to persuade the audience to be biased against a field of study associated with this group. The argument does not present any evidence pertaining to logic itself and does not offer reasons against its study.

8) A **False Dilemma** fallacy presents a limited set of options for the audience to select from, a set of options that is not in fact exhaustive of all of the possibilities. So the claimant creates a false dilemma by saying that one can only choose between a given set of options when in fact there are other options beyond this set.

Example: 'Ali must either attend college or be unemployed.

The above argument does not assume any possibilities beyond these two options. 'Ali could find gainful employment without going to college.

9) An **Appeal to the Bandwagon** argument presents the number of people who believe in something as evidence that it must be true.

Example: If you want to have peace at home, make ginger tea for the family every Friday. Everyone in the neighborhood does this for the same purpose.

The fact that "everyone" (or a number of people) does something does not make it true.

Example: The study of logic is wrong because it entered Islamic thought through philosophers who were heretics.

Such an argument is invalid because it assumes that the audience discredits philosophers for reasons of heresy and then it uses this bias to persuade the audience to be biased against a field of study associated with this group. The argument does not present any evidence pertaining to logic itself and does not offer reasons against its study.

Unless this spiritual leader also happens to be a medical practitioner with knowledge of medicines, using an audience's respect for him to persuade them about the quality of a cold medicine does not support the claimant's argument. The imam's religious authority is irrelevant in determining the best pharmaceutical products.

Example: 'Ali must either attend college or be unemployed.

The above argument does not assume any possibilities beyond these two options. 'Ali could find gainful employment without going to college.

Example: If you want to have peace at home, make ginger tea for the family every Friday. Everyone in the neighborhood does this for the same purpose.

The fact that "everyone" (or a number of people) does something does not make it true.

Example: The study of logic is wrong because it entered Islamic thought through philosophers who were heretics.

Such an argument is invalid because it assumes that the audience discredits philosophers for reasons of heresy and then it uses this bias to persuade the audience to be biased against a field of study associated with this group. The argument does not present any evidence pertaining to logic itself and does not offer reasons against its study.

Unless this spiritual leader also happens to be a medical practitioner with knowledge of medicines, using an audience's respect for him to persuade them about the quality of a cold medicine does not support the claimant's argument. The imam's religious authority is irrelevant in determining the best pharmaceutical products.

Example: 'Ali must either attend college or be unemployed.

The above argument does not assume any possibilities beyond these two options. 'Ali could find gainful employment without going to college.

Example: If you want to have peace at home, make ginger tea for the family every Friday. Everyone in the neighborhood does this for the same purpose.

The fact that "everyone" (or a number of people) does something does not make it true.

Example: The study of logic is wrong because it entered Islamic thought through philosophers who were heretics.

Such an argument is invalid because it assumes that the audience discredits philosophers for reasons of heresy and then it uses this bias to persuade the audience to be biased against a field of study associated with this group. The argument does not present any evidence pertaining to logic itself and does not offer reasons against its study.

Unless this spiritual leader also happens to be a medical practitioner with knowledge of medicines, using an audience's respect for him to persuade them about the quality of a cold medicine does not support the claimant's argument. The imam's religious authority is irrelevant in determining the best pharmaceutical products.

Example: 'Ali must either attend college or be unemployed.

The above argument does not assume any possibilities beyond these two options. 'Ali could find gainful employment without going to college.

Example: If you want to have peace at home, make ginger tea for the family every Friday. Everyone in the neighborhood does this for the same purpose.

The fact that "everyone" (or a number of people) does something does not make it true.

Example: The study of logic is wrong because it entered Islamic thought through philosophers who were heretics.

Such an argument is invalid because it assumes that the audience discredits philosophers for reasons of heresy and then it uses this bias to persuade the audience to be biased against a field of study associated with this group. The argument does not present any evidence pertaining to logic itself and does not offer reasons against its study.

Unless this spiritual leader also happens to be a medical practitioner with knowledge of medicines, using an audience's respect for him to persuade them about the quality of a cold medicine does not support the claimant's argument. The imam's religious authority is irrelevant in determining the best pharmaceutical products.

Example: 'Ali must either attend college or be unemployed.

The above argument does not assume any possibilities beyond these two options. 'Ali could find gainful employment without going to college.

Example: If you want to have peace at home, make ginger tea for the family every Friday. Everyone in the neighborhood does this for the same purpose.

The fact that "everyone" (or a number of people) does something does not make it true.

Example: The study of logic is wrong because it entered Islamic thought through philosophers who were heretics.

Such an argument is invalid because it assumes that the audience discredits philosophers for reasons of heresy and then it uses this bias to persuade the audience to be biased against a field of study associated with this group. The argument does not present any evidence pertaining to logic itself and does not offer reasons against its study.

Unless this spiritual leader also happens to be a medical practitioner with knowledge of medicines, using an audience's respect for him to persuade them about the quality of a cold medicine does not support the claimant's argument. The imam's religious authority is irrelevant in determining the best pharmaceutical products.

Example: 'Ali must either attend college or be unemployed.

The above argument does not assume any possibilities beyond these two options. 'Ali could find gainful employment without going to college.

Example: If you want to have peace at home, make ginger tea for the family every Friday. Everyone in the neighborhood does this for the same purpose.

The fact that "everyone" (or a number of people) does something does not make it true.

Example: The study of logic is wrong because it entered Islamic thought through philosophers who were heretics.

Such an argument is invalid because it assumes that the audience discredits philosophers for reasons of heresy and then it uses this bias to persuade the audience to be biased against a field of study associated with this group. The argument does not present any evidence pertaining to logic itself and does not offer reasons against its study.

Unless this spiritual leader also happens to be a medical practitioner with knowledge of medicines, using an audience's respect for him to persuade them about the quality of a cold medicine does not support the claimant's argument. The imam's religious authority is irrelevant in determining the best pharmaceutical products.

Example: 'Ali must either attend college or be unemployed.

The above argument does not assume any possibilities beyond these two options. 'Ali could find gainful employment without going to college.

Example: If you want to have peace at home, make ginger tea for the family every Friday. Everyone in the neighborhood does this for the same purpose.

The fact that "everyone" (or a number of people) does something does not make it true.

Example: The study of logic is wrong because it entered Islamic thought through philosophers who were heretics.

Such an argument is invalid because it assumes that the audience discredits philosophers for reasons of heresy and then it uses this bias to persuade the audience to be biased against a field of study associated with this group. The argument does not present any evidence pertaining to logic itself and does not offer reasons against its study.

Unless this spiritual leader also happens to be a medical practitioner with knowledge of medicines, using an audience's respect for him to persuade them about the quality of a cold medicine does not support the claimant's argument. The imam's religious authority is irrelevant in determining the best pharmaceutical products.

Example: 'Ali must either attend college or be unemployed.

The above argument does not assume any possibilities beyond these two options. 'Ali could find gainful employment without going to college.

Example: If you want to have peace at home, make ginger tea for the family every Friday. Everyone in the neighborhood does this for the same purpose.

The fact that "everyone" (or a number of people) does something does not make it true.

Example: The study of logic is wrong because it entered Islamic thought through philosophers who were heretics.

Such an argument is invalid because it assumes that the audience discredits philosophers for reasons of heresy and then it uses this bias to persuade the audience to be biased against a field of study associated with this group. The argument does not present any evidence pertaining to logic itself and does not offer reasons against its study.

Unless this spiritual leader also happens to be a medical practitioner with knowledge of medicines, using an audience's respect for him to persuade them about the quality of a cold medicine does not support the claimant's argument. The imam's religious authority is irrelevant in determining the best pharmaceutical products.

Example: 'Ali must either attend college or be unemployed.

The above argument does not assume any possibilities beyond these two options. 'Ali could find gainful employment without going to college.

Example: If you want to have peace at home, make ginger tea for the family every Friday. Everyone in the neighborhood does this for the same purpose.

The fact that "everyone" (or a number of people) does something does not make it true.

Example: The study of logic is wrong because it entered Islamic thought through philosophers who were heretics.

Such an argument is invalid because it assumes that the audience discredits philosophers for reasons of heresy and then it uses this bias to persuade the audience to be biased against a field of study associated with this group. The argument does not present any evidence pertaining to logic itself and does not offer reasons against its study.